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The fauna of the family Bombycidae sensu lato (Insecta, Lepidoptera, Bombycoidea) from Mainland China, Taiwan and Hainan Islands

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Abstract

Seventy-seven species of family Bombycidae s. lat., belonging to 25 genera in three subfamilies, that have been recorded from China are listed and described, with illustrations of the adults, preimaginal stages (if available), and their genitalia. Keys to subfamilies and genera are provided. Two new genera and four new species are described, two subgenera are raised to generic status, seven new combinations are made, and one genus and six species are newly recorded from China. The new taxa are as follows: *Rotunda* Wang, X. & Zolotuhin, **gen. nov.**, *Comparmustilia* Wang, X. & Zolotuhin, **gen. nov.**, *Triuncina daii* Wang, X. & Zolotuhin, **sp. nov.**, *Triuncina xiongi* Wang, X. & Zolotuhin, **sp. nov.**, *Gnathocinara boi* Wang, X. & Zolotuhin, **sp. nov.** and *Promustilia yajiangensis* Wang, X. & Zolotuhin, **sp. nov.** The taxa newly recorded for China are: *Sesquiluna* Forbes, 1955; *Trilocha friedeli* Dierl, 1978; *Bivincula kalikotei* Dierl, 1978; *Sesquiluna forbesi* Zolotuhin & Witt, 2009; *Mustilizans lepusa* Zolotuhin, 2007; *Smerkata brechlini* (Zolotuhin, 2007) and *Mustilia castanea* Moore, 1879. The seven new combinations are: *Rotunda rotundapex* (Miyata & Kishida, 1990), **comb. nov.**, *Triuncina nitida* (Chu & Wang, L.Y., 1993), **comb. nov.**, *Gunda sesostris* (Vuillot, 1893), **comb. nov.**, *Smerkata fusca* (Kishida, 1993), **comb. nov.**, *Comparmustilia sphingiformis* (Moore, 1879), **comb. nov.**, *Comparmustilia semiravida* (Yang, 1995), **comb. nov.**, *Comparmustilia gerontica* (West, 1932), **comb. nov.**. The two subgenera raised to generic level are: *Promustilia* Zolotuhin, 2007, **stat. nov.** and *Smerkata* Zolotuhin, 2007, **stat. nov.**. The distributions of the species in China were determined and distributional maps provided. All type specimens of the new species described here are deposited in the College of Plant Protection, Hunan Agricultural University, China (HUNAU); Department of Entomology, South China Agricultural University, China (SCAU); Kyushu University Museum, Kyushu University, Japan (KUM), and Entomological Museum Thomas J. Witt, Munich, Germany (MWM).

Key words: Lepidoptera, Bombycidae, taxonomy, new genus, new species, new record, morphology, immature stages, genitalia, larval host plants, geographical distribution, China

Introduction

The family Bombycidae s. lat. belongs to the lepidopteran superfamily Bombycoidea and contains about 40 genera and 350 species (Lemaire & Minet, 1999). The best-known species is the silkworm, *Bombyx mori* (Linnaeus, 1758), which has been domesticated for several millennia. Another well-known species is wild silkworm, *Bombyx mandarina*, which is also native to Asia. Several other bombycid species are economically important pests in the agriculture, forestry, sericulture and horticulture industries. Bombycid moths are widely distributed around the world, of which twenty percent are recorded from China, which includes two of the twenty-five biodiversity hotspots in the world (Myers *et al.*, 2000).

Dierl (1978, 1979) reviewed the Oriental Bombycidae, which includes many of the species in China, and reported 42 species belonging to eight genera, including six new genera, eight new species and two new subspecies. Kishida (1992b, 1993a) recorded 13 bombycid species in eight genera from Taiwan. Chu & Wang (1993) reported nine genera and 28 species of Chinese bombycid moths, of which ten new species were described but many have subsequently been shown to be synonyms of previously known species. Subsequently, Chu & Wang (1996) presented detailed discussion of the morphology, biology and distributions of those 28 species. Finally, many important descriptions by Yang (1995a) and Yang and Mao (1995) were published in poorly known journals and have thus been overlooked by European scientists. However, despite these works, until now, a comprehensive study of the Chinese bombycid fauna has not been undertaken.

During the past 20 years, much scientific progress has been made in the classification and phylogenetics of the family Bombycidae, with great advances being made based on analysis of molecular data (Arunkumar *et al.*, 2006; Hwang *et al.*, 1999; Mahendran *et al.*, 2006a, 2006b; Zwick, 2008; Zwick *et al.*, 2011). Holloway (1987) was one of the first to consider members of the Oriental Bombycidae to comprise two lineages based on characters of wing venation and male genitalia. Zwick *et al.* (2011) placed three groups previously included in the bombycid subfamily Prismostictinae in families Mirinidae and Endromidae. Subsequently, this treatment was followed by Nieuwerkerken *et al.* (2011) and Wu *et al.* (2013), but Kishida (2013) still followed Lemaire & Minet (1999), and treated Prismostictinae and Oberthueriini as members of family Bombycidae. However, Zwick *et al.* (2011), did not include representatives of many bombycid genera and so although a useful basis for future study, we do not consider it a full confirmation of the evolutionary relationships of the family Bombycidae. Furthermore, they made no attempt to integrate genetic and morphological data, and thus separated apparently morphologically related groups of Bombycidae s. lat., into the so-far not morphologically supported family, “Endromi(di)dae s. lat.”. We consider that more data are necessary to fully analyze the systematic relationship of the subfamilies and genera in the family Bombycidae, the relationships among which are still unclear. In this paper, we continue to follow the systematic arrangement of Lemaire & Minet (1999).

Based on specimens in museums and materials collected from the field, all the bombycid species in China have been examined and confirmed. Distribution maps are presented, together with keys to the subfamilies, genera and species found in China.

History

Chinese history is closely bound to the development of silkworm rearing and the silk production industry. The origin of silk has a very beautiful story in China. Once upon a time, Lei Zu, who was the wife of the Yellow Emperor, sat under a mulberry tree enjoying herb tea. Suddenly, a silkworm cocoon fell into her cup. The Empress took the cocoon out but was amazed to find that it began to unwind. The fine thread became longer and longer until it was meters long. At that moment, Lei Zu realized that it was a wonderful material to make into a textile. From that time, the Empress was called “The Goddess of Silk”. In her honor, the cocoons of silkworms were displayed on altars at special feasts.

History says that the cocoons and their amazing properties were discovered by ancient Chinese people almost 5 000 years ago, but the silkworm was first domesticated during the Shang Dynasty (1600-1046 B.C.).

Archeological excavations in various districts of China have found cultural layers dating from the third millennium B.C.. Tortoiseshell and bones were also found bearing the hieroglyphs for “silkworm”, “mulberry tree”, “silk” and “silk clothing”.

It is known that silkworms were bred in six provinces in China and the center of sericulture in the fifth century B.C. was Hangzhou. Sericulture work began in the spring, and lasted six months. It was a happy and intellectually stimulating job for many agricultural class women. At first, only members of the imperial family dressed in the rare textile. The emperor and his family members wore white silk clothes in his palace and yellow silk on ceremonial occasions. Later, with the growth of manufacturing, silk textiles became available to the people of the courts and to commoners.

Zealous worship of silk in China reached unbelievable heights. The silkworm diety, Lei Zu, sacramental mulberry trees or whole mulberry forests were repeatedly mentioned in ancient Chinese texts, and often used as places for special cultural rituals.

Silk was also used to produce bowstrings and fish threads, strings for musical instruments, and paper. In the Han Dynasty (III century BC- III century AD), silk had become a general equivalent for money; peasants paid their taxes with it and the government paid civilian people with it. The main silk producing centers were then known to be in the territories of modern Shanxi, Shandong, Henan and Sichuan. In the age of Warring States (475 - 221 years BC), silk and silk textiles became available to all people.

Silk and silk textiles left China for the first time in the second century BC when the Chinese ambassador Zhang Qian arrived in the Central Asiatic countries. After that, silk clothing was shipped to Korea and Japan. The road that transported silk and silk clothing westwards became known as the Silk Road. Silkworm breeding and silk production were trade secrets for millennia. Anyone who attempted to take the eggs, caterpillars, pupae or moths of the silkworm out of China would be punished with the death penalty.

An important change in silk weaving and sericulture took place during the Tang period (618–907 years AD). The palace weaving workshops, which were called "Office of Weaving and Painting", were established in the capital at Changan. They first produced aulic ceremonial headgear, then later began to produce silk fabric and multicolored silk textiles. At that time, silk production was further expanded to Liaoning, Annan and Xizang. Mulberry-grafting technology also made great advances. When the economic center moved south, silk production and sericulture in the Yangtze River region were further developed. This period was a high point in Chinese silk production and there was a flourishing trade exporting large quantities either by sea or by camel train along the Silk Road, to Persia, India and Europe.

The silk business and sericulture in the Yellow River region gradually declined after the Song dynasty. Silk towns in regions south of the Yangtze sprang up, and silk folk-custom became deeper and showed distinct community-based cultural characteristics during the Ming and Qing dynasties. Silkworms and silk were very mysterious in ancient times, but now many countries have their own successful silkworm breeding and silk weaving technologies. However, the origins of silkworm domestication and silk production have always been debated. To many people, it is still incredible that this little caterpillar can produce beautiful silk and that this silk can be turned into thread.

Materials & Methods

Where possible samples were collected in the field by light trapping or collecting larvae. The types of previously described species deposited in the following museums or institutions were examined:

- BMNH = Natural History Museum, London, United Kingdom;
- CAHU = Collection of Armin Hauenstein, Untermühleim, Germany;
- CAU = China Agricultural University, Beijing City, Beijing;
- CMSW = Collection of Manfred Ströhle, Weiden, Germany;
- HUM = Hokkaido University Museum, Hokkaido University, Sapporo, Japan;
- HUNAU = Hunan Agricultural University, Changsha City, Hunan;
- IZCAS = Institute of Zoology, Chinese Academy of Sciences, Beijing;
- KUM = Kyushu University Museum, Kyushu University, Fukuoka, Japan;
- MWM = Entomological Museum Thomas J. Witt, Munich, Germany;

NIAES = National Institute for Agro-Environmental Sciences, Tsukuba, Ibaraki, Japan;
 NMNS = National Museum of Nature and Science, Taichung City, Taiwan;
 NRMS = Naturhistoriska riksmuseet Stockholm, Sweden;
 NSMT = National Science Museum, Tokyo, Japan;
 OPU = Osaka Prefecture University, Sakai, Osaka, Japan;
 OUMNH = Oxford University Museum of Natural History, United Kingdom;
 SCAU = South China Agricultural University, Guangzhou City, Guangdong;
 SMF = Senckenberg Museum, Frankfurt-am-Main, Germany;
 SPUU = State Pedagogical University of Ulyanovsk, Ulyanovsk, Russia;
 TFRI = Taiwan Forestry Research Institute, Taipei City, Taiwan;
 ZFMK = Zoologisches Forschungsinstitut und Museum Alexander Koenig, Bonn, Germany;
 ZMHU = Zoologisches Museum der A. Humboldt Universität, Berlin, Germany;
 ZSM = Zoologische Staatssammlung der Bayerisch Staaten, Munich, Germany.

Further abbreviations: TL = type locality, NR = Nature Reserve, Mt = Mountain and fed. = Feeding.

The original orthography of labels is maintained only for holotypes, with a transcription of local Chinese geographical names being given in brackets for other specimens. For species with unchecked specimens, descriptions are cited from original publications and related literature.

Genitalia were examined after maceration in hot 10% potassium hydroxide (KOH) solution. The genital preparations were mounted in Euparal on glass slides using standard dissecting techniques. Measurements were made under a binocular microscope (LEICA s8apo) at $2.0 \times$ magnification. Photographs of adults and genitalia were taken using Canon EOS 50D and Olympus Camedia C-750 cameras with a Soligor Adapter Tube for the Olympus and a Slide Duplicator for Digital photos. Morphological terminology in descriptions follows Lemaire & Minet (1999). Type specimens of the new species described here are deposited in HUNAU, SCAU, SPUU and MWM.

Taxonomy

Family Bombycidae Latreille, 1802

Diagnosis. The family is characterized by the dorsal pleated zone of the hindwing, which is the most heavily patterned part of the wing and often somewhat concave. The frenulum is present but very short and rather stout. The diagnostic features of the female genitalia for this family are indistinct.

Distribution. The family is recorded from all Old World zoogeographic regions and New World with the subfamily Epiinae, but has its greatest diversity in the Oriental Region.

Remarks. The most famous member of the family is the silkworm, *Bombyx mori*, which has been domesticated for millennia in China. Another well known species is *Bombyx mandarina*, which is also native to Asia. In the New World, the family Apatelodidae has previously been regarded as Bombycidae (Minet, 1994), but are now considered distinct, though allied to the Bombycidae, Eupterotidae and Anthelidae (Zwick, 2008; Zwick *et al.*, 2011). In China, the genera of family Bombycidae s. lat. are be divided into three subfamilies based on characters of the wing venation and male genitalia, as well as preimaginal characteristics. The Chinese bombycid fauna is mainly Sino-Himalayan, but with some Indo-Malayan and Eastern Palaearctic elements.

Key to the subfamilies of Bombycidae in China

1. CuP present in both wings; M stem vestige present in discal cell of forewing; all forewing radial veins except Rs₄ arising anteriorly from Rs; hindlegs with one pair of tibial spurs; sclerites of abdominal segment 8 strongly modified. Male genitalia: vinculum cup-shaped; tergal processes reduced in size; valvae reduced, finger-shaped; sacculus long and slender. Larvae with short setae and swollen thoracic segments, with rather clearly well visible anal horn. Bombycinae
- CuP absent; M stem vestige lacking in discal cell of forewing; forewing with only four radial veins present with the posterior

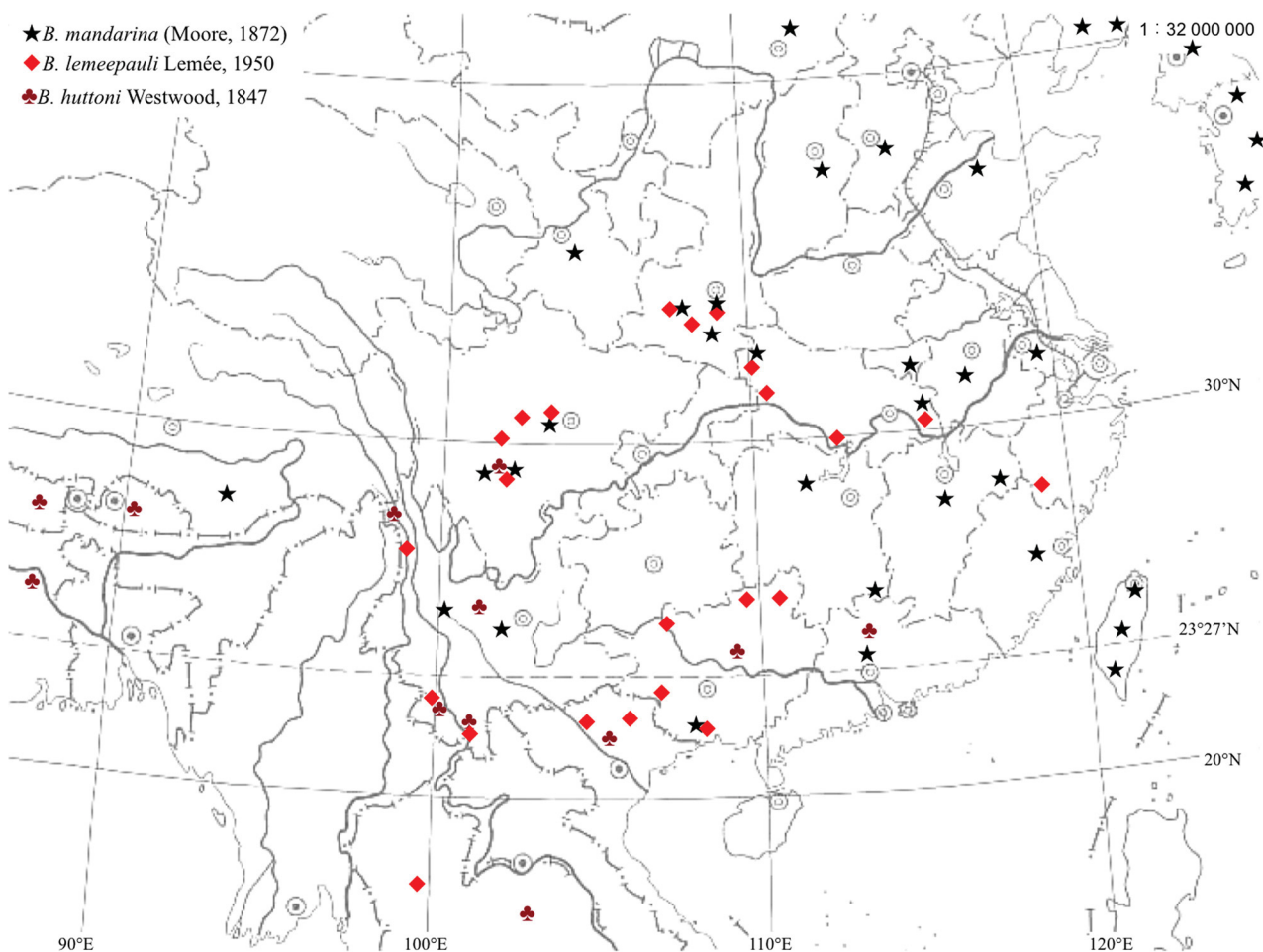
- two arising posteriorly from Rs; hindlegs with two pairs of tibial spurs; sclerites of segment 8 only slightly modified 2
2. Eyes setose; antennae fully pectinate. Male genitalia: valvae often with complex harpal appendages. Larvae with flattened thoracic segments and a long curved anal horn Prismostictinae
- Eyes naked; antennae distally devoid of well-developed rami. Male genitalia: valvae flattened, usually without harpal appendages but with setose basal. Larvae with narrowed thoracic segments and, if present, anal horn extremely long and curved Oberthuerinae

Subfamily Bombycinae Latreille, [1802]

Diagnosis. In addition to the characters given in the first couplet of the key, the foreleg tibia has soft, helmet-like setae (at least in males) and a long tibial epiphysis, and the 8th abdominal sternite in the males is densely covered with sharp setae. Larvae feed mainly on Moraceae.

Distribution. Widely distributed around the world except the New World and Western Europe.

Remarks. Two lineages can be recognized within the subfamily: the *Bombyx* genus group and the *Ocinara* genus group.



Map 1. Distribution of *Bombyx* spp. mainly in China. **B. mori* as a domesticated species rose worldwide; its distribution is not shown on the map.

Key to the genera of Bombycinae in China

1. Forewing with strongly falcate apex 2
- Forewing with slightly falcate or rounded apex 4
2. Body lightly gray or yellow; forewing with a rectangle black spot near apex; Geometridae-like day flying species with broad wings *Rondotia* Moore

-	Body heavily gray or ocher; forewing with a crescent-shaped spot or without spots near apex; robust crepuscular species.	3
3.	Tornus of hindwing with a prominent recurved projection, forewing without a crescent-shaped spot near apex	<i>Gunda</i> Walker
-	Tornus of hindwing without a prominent recurved projection, forewing with a crescent-shaped spot near apex	<i>Bombyx</i> Linnaeus
4.	Body yellowish-brown; forewing veins connected by serrate submarginal line.	<i>Rotunda</i> Wang, X. & Zolotuhin, gen. nov.
-	Body not yellowish-brown; forewing veins not connected by serrate submarginal line	5
5.	Costal and inner margins edged with yellow and black	<i>Valvaribifidum</i> Wang, X., Huang & Wang, M.
-	Costal and inner margins not edged with yellow and black	6
6.	Valva long slice, apex divided into two forks	<i>Ernolatia</i> Walker
-	Valva not long slice, apex not divided into two forks	7
7.	Valva strongly developed	8
-	Valva small to completely reduced	10
8.	Dark-colored, medium-sized species; uncus single, thin and straight; socii paired and sclerotized	<i>Triuncina</i> Dierl
-	Mostly whitish species; uncus hooked or bifurcate; socii not sclerotized	9
9.	Uncus hooked	<i>Bivincula</i> Dierl
-	Uncus bifurcate	<i>Gnathocinara</i> Dierl
10.	Uncus bifurcate	<i>Penicillifera</i> Dierl
-	Uncus not divided	11
11.	Uncus hooked.	<i>Ocinara</i> Walker
-	Uncus straight	<i>Trilocha</i> Moore

I. *Bombyx* Linnaeus, 1758 (FIGURES 1–3)

Bombyx Linnaeus, 1758, *Systema Naturae* 1: 495. Type species: *Phalaena (Bombyx) mori* Linnaeus, 1758, *Systema Naturae*, 1: 499, by subsequent designation in *Opin. Decl. int. Commn zool. Nom.* 1957, 15: 254 (originally proposed as a subgenus of *Phalaena* Linnaeus, 1758).

Bumbyx: Fabricius, 1777, *Genera Insect.* 277. Incorrect subsequent spelling.

Bombix: Mabille, 1884, in Rochebrune, *Bull. Soc. philomath. Paris*, 8 (7): 31. Incorrect subsequent spelling.

Theophila Moore, 1862, *Trans. ent. Soc. Lond.* 1 (4): 315. Type species: *Bombyx bengalensis* Moore, 1862, *Trans. ent. Soc. Lond.* 1 (4): 315, by subsequent designation by Kirby, 1892, *Syn. Cat. Lepid. Het.*, 1: 719.

Diagnosis. Easily distinguished based on the following characters: forewing with M1 and Rs on a common stem; outer margin below apex obviously concave; uncus apically bifurcate with rounded lobes; gnathos a broadly rounded-triangular lobe, valva narrow and long.

Distribution. South-East Asia, with one domestic species now distributed worldwide.

Remarks. The genus consists of six species, including the wild relative of the cultivated silkworm, *B. mori*. Originally proposed as a subgenus of *Phalaena* Linnaeus, 1758, in which many species of numerous other families, particularly Noctuidae were included (Nye, 1975), the International Commission for Zoological Nomenclature Used its plenary powers to place *Bombyx* on the Official List of Generic Names in Zoology with “Name number 1056” as the zoological number (Fletcher & Nye, 1982; Beccaloni *et al.*, 2003). Moore (1862) established the genus *Theophila* with five included species. Fletcher & Nye (1982) synonymized *Theophila* with *Bombyx* based on its type species *Bombyx bengalensis* Moore, 1862 being a junior synonym of *B. huttoni* Westwood, 1847 (Beccaloni *et al.*, 2003). In the present paper, four *Bombyx* species are recorded from China (Map 1).

Key to the species of *Bombyx* in China

1. Body and wings variably cream-white, domesticated species not found in the wild *B. mori*
- Body and wings not white, wild species 2
2. Forewing with three distinct white semicircular transverse bands, apex only slightly falcate *B. lemeepauli*
- Forewing without transverse white bands, apex strongly falcate 3
3. Hindwing outer margin smooth; valva longer than height of uncus. *B. mandarina*
- Hindwing outer margin serrate, valva shorter than height of uncus *B. huttoni*

1. *Bombyx mori* (Linnaeus, 1758) (FIGURES 1A–1B, 3A–3C)

Phalaena (Bombyx) mori Linnaeus, 1758, *Syst. Nat.* 1: 499. TL: “Chinae,.. hodie culta per Europam”. Type: male (Linnean Society London) [examined].

Bombyx sinensis Moore & Hutton, 1862, *Trans. ent. Soc. Lond.* 1 (3): 313. TL: “Inhabits China”.

Bombyx croesi Moore & Hutton, 1862, *Trans. ent. Soc. Lond.* 1 (3): 313. TL: “Inhabits China”.

Bombyx fuscata Motschulsky, 1866, *Bull. Soc. Imp. Nat. Moscou* 39 (1): 192. TL: [Japan].

Bombyx fortunatus Moore & Hutton, 1862, *Trans. ent. Soc. Lond.* 1 (3): 313. TL: “Inhabits China”.

Bombyx arracanensis Moore & Hutton, 1862, *Trans. ent. Soc. Lond.* 1 (3): 314. TL: “Cultivated in Arracan, but is said to have been introduced from China”.

Bombyx textor Moore & Hutton, 1862, *Trans. ent. Soc. Lond.* 1 (3): 314. TL: “Inhabits China”.

Diagnosis. Characterized by the following features: body and wings white with veins clearly visible; uncus about 1/3 length of valva; valva broad basally and narrow distally; saccus slender and short with pointed apex; aedeagus straight; apophyses posteriores longer and thicker than apophyses anteriores; ductus bursae very short.

Specimens examined (all from domesticated stock). [HUNAN] Changsha City: 8 males and 12 females, campus of Hunan Agricultural University, 13–15.IX.2012, Tui-Zi Feng fed. (HUNAU); [GUANGDONG] Guangzhou City: 2 males and 3 females, campus of South China Agricultural University, 7–9.VII.2003, Guo-Hua Huang fed. (SCAU); 4 males and 5 females, campus of South China Agricultural University, 14–17.X.2006, Liu-Sheng Chen fed. (SCAU); 3 males, Yasunori Kishida collection, donation, 2002 (NSMT); 2 males and 1 female, Syoziro Asahira collection, donation 1998 (NSMT).

Bionomics. *Morus alba* Linn., 1753 is the larval host. It is mostly reared in domestic manufacturing plants in villages. Eggs are initially round and white (Plate 1B), later slowly changing to gray (Plate 1C). The larvae are quite variable in color with the thoracic zone swollen and the caudal horn reduced to a hump (Plate 1D–1E). The pupa is enclosed in a white or yellow cocoon (Plate 1F–1G) from which the adults emerge through an emergence hole and mate soon after (Plate 1A, 1H).

Distribution. Cultivated throughout China, and also distributed widely throughout tropical and subtropical areas of the world.

Remarks. Robinson *et al.* (2010) reported that the host plants of this species are consisting of *Morinda citrifolia* Linn., 1753 (Rubiaceae), *Morus alba* Linn., 1753 and *M. nigra* Linn., 1753 (both Moraceae). The silkworm is an economically important insect, being a primary producer of silk. It was domesticated from the wild silkmoth, *Bombyx mandarina*, and is entirely dependent on humans for its reproduction as it does not occur in the wild. The practice of breeding silkworms for the production of raw silk has been under way for at least 5,000 years in China, from where it spread to Korea, Japan, India and the West (Barber, 1992; Chu & Wang, 1996). As a model species for biological research, the complete silkworm genome was sequenced by Xia *et al.* (2004). Subsequently, many genetic analyses have been done based on this by other researchers (e.g. Miao *et al.*, 2005; Mita *et al.*, 2004; Xia *et al.*, 2009).

2. *Bombyx mandarina* (Moore, 1872) (FIGURES 1C–1D, 2A–2C, 3D)

Bombyx mandarina Moore, 1872, *Proc. Zool. Soc. Lond.* 1872: 576, pl. XXXIII, fig. 5. TL: [China] “Neighborhood of Shanghai”. Holotype: male (BMNH) [examined].

Theophila mandarina formosana Matsumura, 1927, *J. Coll. Agric. Hokkaido Univ.* 19: 51, pl. V, fig. 47. TL: “Formosa (Horisha)” (=Taiwan). Holotype: male (Sapporo University) [examined].

Diagnosis. The male genitalia of *B. mandarina* are similar to those of *B. mori*, but the species can be distinguished the latter by the following characters: body and wings brown or reddish brown; forewing with a dark crescent-shaped apical spot, medial line broad and arched; postmedial lines almost straight; submarginal line edged with white.

Specimens examined. 1 male, holotype of *mandarina*, Shanghai, N. China (BMNH); 1 male, type of *formosana*, det. Matsumura, Type, Matsumura, Baibara, 22.VII.1925 (Sapporo University); [ZHEJIANG] Longquan City: 1 male, Mt. Huangmaojian, 1400–1880 m, March to middle April 2000, J. Li leg. (MWM); [TAIWAN] Yilan County: 1 male, 10.VIII.1936, Taiheizan (Mt. Taiping), 24°29’N, 121°31’E, E. & S. Asahina leg., Syoziro Asahina’s collection, donation, 1998 (NSMT); 1 female, Fushan Botanic Garden, 750 m, 9.VI.2011,

Shipher Wu & Wei-Chung Chang leg. (TFRI); Nantou County: 1 male, Aowanda, 1100 m, 8.XI.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); Pingtung County: 1 male, Nanrenshan, 25.IX.2013. Jing-Fu Tsai leg. (TFRI); Taitung County: 1 female, 5 km west of Chipen, 350 m, 15–16.V.1997, Gy. M. Laszlo & G. Laszlo leg. (MWM); 138 males and 28 females from different counties of Taiwan (Taitung, Taoyuan, Ping-Tung, Kaoshiung, Ilan, Nantou) (MWM); [HENAN] Xinyang City: 2 males, Dabie Shan, 1500 m, 15 km south of Shou-Man village, 31°33'N, 114°48'E, September 2000, local collector leg. (MWM); [HUBEI] Huanggang City: 4 males and 1 female, Tapien Shan (Mt. Dabieshan), June to August 1999, J. Li leg. (MWM); Shiyan City: 1 male, Mt. Niutou, 1550 m, August 2000, local collector leg. (MWM); 5 males, Mt. Wudangshan, 1500 m, 32°16'N, 110°57'E, summer 2000, local collector leg. (MWM); Fangxian County: Heishan Mt., August 1998, Li leg., via A. Schintlmeister, November 2000 in W. A. Nassig's collection; [HUNAN] Taoyuan County (Wuyunjie National NR): 1 male, 26.VIII.2008, Guo-Hua Liu leg. (HUNAU); Dong'an County (Shunhuangshan National Park): 1 larva on *Morus australis*, bred, adult emerged September 2008, Liu-Sheng Chen & Min Wang leg. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 4 males, 30 km southwest of Nanping town, 900 m, 21°43'N, 107°32'E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); [SHAANXI] Xi'an City (Mts. Qinling): 1 male, 1850 m, 40 km south of Xi'an, 33°52'N, 108°50'E, 22–24.VI.2004, Viktor Sinyaev leg. (MWM); Taibai County (Mts. Tsinling (Qinling), Mt. Taibaishan, Houzhenzi): 16 males, 1400 m, IX.1998, 33°51'N, 107°49'E, local collector leg. (MWM); 1 male, Dudamen village, 1500 m, 33°50'N, 107°41'E, October 2003, Viktor Sinyaev leg. (MWM); 19 males, China, 1500 m, IX.2000, 33°53'N, 107°49'E, local collector leg. (MWM); 11 males, 1400 m, October 1998, 33°51'N, 107°49'E, local collector leg. (MWM); 8 males, 1600 m, 27.V–08.VI.1999, 33°53'N, 107°49'E, local collector leg. (MWM); 6 males, 1500 m, summer 2000, 33°53'N, 107°49'E, local collector leg. (MWM); Ningshan County: 4 males, 1500 m, near Ningshan town, 33°44'N, 106°26'E, X.2001, local collector leg. (MWM); Mts. Daba Shan (Tapa Shan): 7 males, 1800 m, 15 km south of Shou-Man village, 32°08'N, 108°37'E, summer 2000, local collector leg. (MWM); 1 male and 1 female, 1000 m, Shou-Man village, 32°14'N, 108°34'E, 24–25.V.2000, Siniaev & Plutenko leg. (MWM); 1 female, 900–1000 m, 32°56'N, 109°25'E, 20–24.VIII.2001, local collector leg. (MWM); [SICHUAN] Luding County: 1 male, Moxi Town, 20.VII.2004, Min Wang & Liu-Sheng Chen Leg. (SCAU); Yajiang County: 1 male, Bajiaolou Town, 5.VIII.2004, Min Wang & Liu-Sheng Chen leg. (SCAU); Danba City: 6 males, 30 km N Danba city, Mt. Maiduoer Shan, July 1999, Li & Wang leg. (MWM); 1 male, Laolinkou, 1900 m, 28°21'N, 103°26'E, 26.VI–12.VII.2008, Viktor Sinyaev leg. (MWM); [YUNNAN] Weishan County (Mt. Weibaoshan): 2800 m, September 2002, Ying *et al.* leg. (MWM); [XIZANG (TIBET)] Ost-Tibet (Mt. Meilixueshan): 6000 m, July 1999, Wang & Li leg. (MWM).

Bionomics. The larval hosts of this species include *Morus australis* Poir., 1796, *Morus alba* Linn., 1753 and *Broussonetia papyrifera* (Linn., 1799) L'Hér. ex Vent. (Moraceae), *Hibiscus rosa-sinensis* Linn., 1753 (Malvaceae), *Diospyros kaki* Thunb., 1780 and *Diospyros oleifera* Cheng, 1935 (Ebenaceae), *Quercus* spp. (Fagaceae) and *Malus* sp. (Rosaceae) (Miyata, 1983; Chu & Wang, 1996). Numerous specimens were collected between July and August 1925 by T. Uchida, R. Saito & K. Kikuchi in Taiwan. Eggs are laid singly or in large clusters without touching each other (Plate 2D). The larva has a short horn (Plate 2E–2G) and the pupa is formed in a yellowish-green cocoon spun between mulberry leaves (Plate 2H). Adults fly in forests from lowlands at about 350 m to 2000 m in Taiwan (Plate 2A–2C).

Distribution. Mainland China (Inner Mongolia, Shandong, Jiangsu, Hebei, Anhui, Jiangxi, Shanxi, Henan, Hubei, Hunan, Guangdong, Guangxi, Shaanxi, Gansu, Sichuan, Yunnan, Xizang) and Taiwan, Japan, Korean Peninsula, Russian Far East.

Remarks. Widely distributed in China, *B. mandarina* is a typical Eastern Palearctic species. The horn on the larvae is present, though short, and the color pattern is more striking and contrasted, as illustrated by Miyata (1970). The cocoon of *B. mandarina* is rather loose and irregular so considerable artificial selection must have been applied to yield the neat, tightly woven cocoon of *B. mori*.

3. *Bombyx lemeepauli* Lemée, 1950 (FIGURES 1E–1F, 3E)

Bombyx lemeepauli Lemée, 1950, *Contrib. l'étude Lépid. Haut-Tonkin et Saigon*: 37. TL: Backan, Vietnam. Holotype (MNHN) [examined].

Theophila albicurva Chu & Wang, 1993, *Sinozool.* 10: 214. TL: Hubei, China. Synonymized by Zolotuhin & Witt, 2009.

Diagnosis. Characterized by the following features: forewing ground color gray; arched and white medial and submarginal lines; a short white line present on the costa medially; a distinct and arched postmedial line on the hindwing; valva longer than uncus; and saccus slender, basally and swollen distally.

Specimens examined. 1 male, holotype of *lemeepauli*, Backan (MNHN); [ZHEJIANG] Longquan City: 1 male, Mt. Huangmaojian, 1400–1880 m, March to April 2000, J. Li leg. (MWM); [HUBEI] Huanggang City: 6 males and 1 female, Tapiéh Shan (Mt. Dabieshan), June to August 1999, J. Li leg. (MWM); 1 male, Tapiéh Shan (Mt. Dabieshan), 900–1600 m, middle June to early August 1999, J. Li leg. (MWM); Shiyan City: 20 males, Mt. Wudangshan, 1500 m, 32°16'N, 110°57'E, September 2000, local collector leg. (MWM); Jianli County: 1 male, Xingou Town, 16.VII.2004, Liu-Sheng Chen leg. (SCAU); Shenglongjia Forest District: 1 male, Shenglongjia National NR, 8–11.VII.2009, Min Wang & Yang Long leg. (SCAU); [GUANGXI] Tian'e County (Buliuhe NR): 1 male, 16.IX.2002, Guo-Hua Huang leg. (HUNAU); Xing'an County (Mao'ershan National NR): 1 male, 1.VI.2003, Guo-Hua Huang & De-Yu Xin leg. (HUNAU); 1 male, 1000 m, 14–16.VIII.2009, Min Wang leg. (NSMT); Jingxi County: 1 male, Tongling Grand Canyon, 25.VII.2008, Liu-Sheng Chen leg. (SCAU); 3 males, Renzhuang Village, 10–15.VII.2006, Liu-Sheng Chen leg. (SCAU); Longsheng County (Huaping National NR): 1 male, Liu-Sheng Chen leg. (SCAU); Fangchenggang City (Shiwandashan National NR): 3 males, 30 km southwest of Nanping town, 900 m, 21°43'N, 107°32'E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); [SHAANXI] Fopin County: 1 male, Qin Ling Mts., 1800 m, 33°35'N, 108°01'E, July 2005, team of Siniaev leg. (MWM); Taibai County (Mts. Tsinling (Qinling), Mt. Taibaishan, Houzhenzi): 9 males, 1500 m, September 2000, 33°53'N, 107°49'E, local collector leg. (MWM); 3 males, 1600 m, 27.V–08.VI.1999, 33°53'N, 107°49'E, local collector leg. (MWM); 7 males and 2 females, Dudamen village, 1500 m, 33°50'N, 107°41'E, X.2003, Viktor Sinyaev leg. (MWM); Xi'an City (Mts. Qinling): 4 males, 1850 m, 40 km south of Xi'an, 33°52'N, 108°50'E, 22–24.VI.2004, Viktor Sinyaev leg. (MWM); Baoji City (Mts. Qinling): 1 female, 760 m, 24.VIII.2014, Min Wang, Hai-Ling Zhuang, Lan-Lan Huang, Lu Wan & Qi-Tong Huang leg.; [SICHUAN] Dujiangyan City: 3 males, Mts. Qingcheng Hou Shan, 70 km northwest of Chengdu, 1500 m, 2–7.XI.2006, S. Murzin leg. (MWM); 16 males, Mt. Qingcheng, 60 km west of Chengdu, 1200 m, 15–25.VIII.2004, S. Murzin leg. (MWM); 4 males, Mt. Qingcheng, 70 km west of Chengdu, 1360 m, 26–30.VIII.2004, S. Murzin leg. (MWM); 59 males, Mt. Qingcheng, 70 km west of Chengdu, 1400 m, 8–14.VI.2005, S. Murzin leg. (MWM); Dayi County: 43 males and 3 females, Mt. Xiling Shan, 1700 m, 50 km west of Dayi, 25.X–7.XI.2006, J.S. Lou leg. (MWM); Mianning County: 1 male, Mt. Lingshan, 376 m., 1–3.VII.2010, local collector leg. (MWM); Baoxing County: 1 male, 1600 m, 11.VII.2003, S. Murzin leg. (MWM); Luding County: 3 males, Mt. Gonggashan, 2300 m., 29°41'N, 101°58'E, 15.IX–04.X.2005, Siniaev & his team leg. (MWM); 1 male, Moxi Town, 19.VII.2004, Min Wang Leg. (SCAU); Wenchuan County/Xiaojin County: 8 males, Wolong National NR/ Mt. Siguliang Shan, 31°09'N, 103°20'E, July 2005, Siniaev & his team leg. (MWM); [YUNNAN] Xishuangbanna Dai Autonomous Prefecture: 2 males and 1 female, Puwen, 30 km southwest of Simao, 900 m, 16.III–10.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Lancang County: 1 male, 130 m southwest of Kunming, 1430 m, 25.XI–5.XII.1998, local collector leg. (MWM); Fugong County: 1 male, 42 km north of Fugong, 1390 m, Lishadi (Walo), 27°15'N, 98°55'E, 14–24.X.1999, local collector leg. (MWM); Mouding County: 1 male, 25°19'N, 101°32'E, 16.III–10.IV.2000, local collector leg. (MWM); Baoshan County (Gaoligong-shan): 1 male, 4000 m, February 2001, local collector leg. (MWM)

Bionomics. Adults appear from June to November (Plate 3A) and there are probably two generations per year. Chu & Wang (1993) reported *Morus alba* Linn., 1753 as the larval host plant, in China.

Distribution. China (Zhejiang, Hubei, Guangxi, Shaanxi, Sichuan, Yunnan), Thailand, Vietnam.

Remarks. This species is endemic to the Himalayan region and differs clearly from its congeners by the typical white semilunar fasciae on a gray ground color. Holloway (1987) considered that it might not belong to *Bombyx*, but it is clearly a member of the genus based on male genital characters and DNA sequence analysis (Zolotuhin & Witt, 2009).

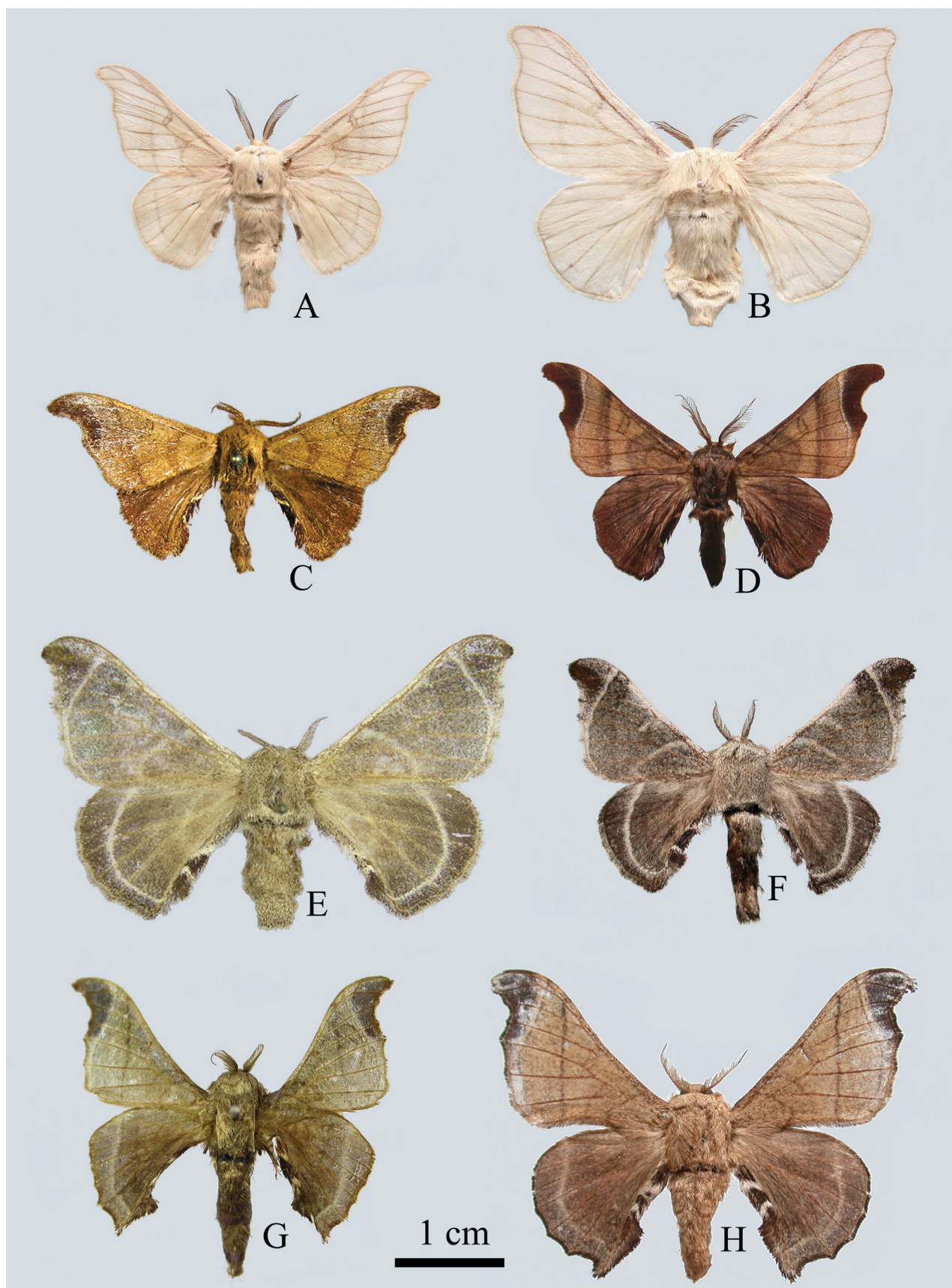


FIGURE 1. Adults of *Bombyx* spp. A. *B. mori*, male (from artificial feeding in Guangzhou); B. *B. mori*, female (from artificial feeding in Guangzhou); C. *B. mandarina formosana*, male holotype of *B. formosana* Mats. (Taiwan); D. *B. mandarina*, male (Sichuan); E. *B. lemeepauli*, female (Hubei); F. *B. lemeepauli*, male (Guangxi); G. *B. huttoni*, male (Guangdong); H. *B. huttoni*, female (Guangdong).

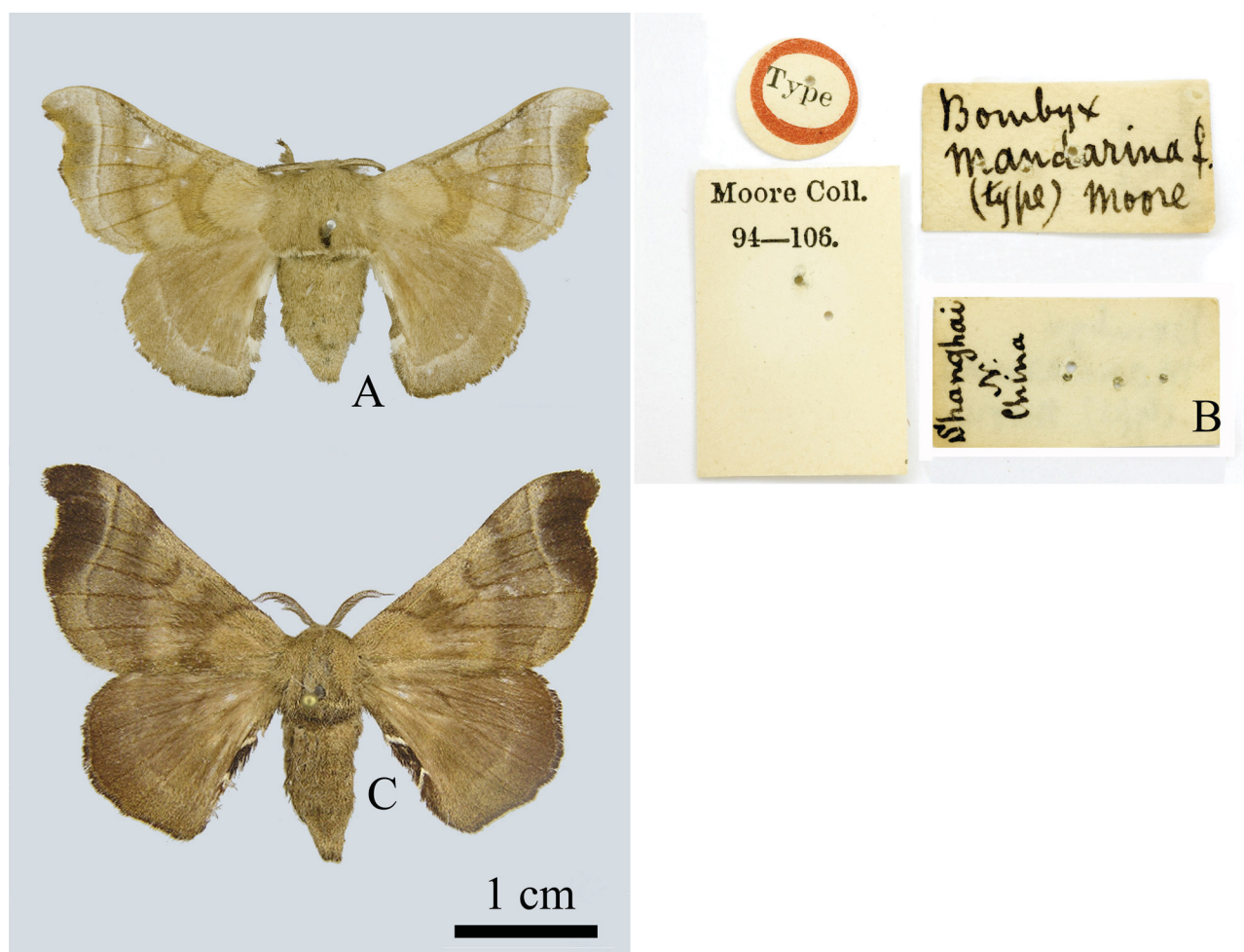


FIGURE 2. Adults and labels of *Bombyx* spp. A–B. *B. mandarina*, male, type (Shanghai); C. *B. mandarina formosana*, female (Taiwan).

4. *Bombyx huttoni* Westwood, 1847 (FIGURES 1G–1H, 3F–3G)

Bombyx huttoni Westwood, 1847, *Cab. Or. Ent.*: 26. TL: [India] “Hills of Mussooree”. Holotype: female (OUMNH) [examined].

Bombyx bengalensis Moore, 1862, *Trans. ent. Soc. Lond.* 1 (4): 315. TL: “in the neighborhood of Calcutta”. Holotype: male (BMNH) [examined].

Bombyx sherwilli Hutton, 1864, *Trans. ent. Soc. Lond.* 2 (3): 324. TL: “in the S.E.Himalayas”.

Bombyx affinis Hutton, 1864, *Geoghegan’s “Silk in India”*, App. A. P.: 3. TL: [India].

Diagnosis. Charactered by the following features: forewing with a distinctly dark crescent-shaped fascia and an acute apex; outer margin serrate; medial and antemedial lines arched and obscure; postmedial line oblique; tegumen narrow; valva short; ductus bursae long.

Specimens examined. 1 female, holotype of *huttoni*, Mussooree (OUMNH); 1 male, holotype of *bengalensis*, Calcutta (BMNH); [GUANGDONG] Yingde County (Shimentai National NR): 2 males, 28.VII.2001, Guo-Hua Huang leg. (HUNAU); 1 female, Qianjin Village, Boluo Town, 27.X.2001, Guo-Hua Huang leg. (HUNAU); [SICHUAN] Mianning County: 1 male, Mt. Ling Shan, 376 m, 1–3.VII.2010, local collector leg. (MWM); [YUNNAN] Xishuangbanna Dai Autonomous Prefecture: 7 males, Puwen, 30 km southwest of Simao, 900 m, 10–30.IV.2000, 22°30’N, 100°02’E, Brechlin’s local collector leg. (MWM); Lancang County: 1 male and 1 female, 130 m southwest of Kunming, 1430 m, 25.XI–5.XII.1998, local collector leg. (MWM); Mouding County: 1 male, 1300 m, 16.III–10.IV.2000, 25°19’N, 101°32’E, local collector leg. (MWM); Simao County: 1 male, 1280 m, Mangxi Ba Mts., 18 km south of Simao city, 22°28’N, 101°01’E, 16.III–10.IV.2000, local collector leg. (MWM); Gongshan County: 1 male, Dulongjiang River, 21–24.VII.2006, Min Wang & Xiao-Ling Fan leg. (SCAU).

Bionomics. The larval host is *Morus alba* Linn., 1753.

Distribution. Mainland China (Guangdong, Guangxi, Sichuan, Yunan); Pakistan, India, Nepal, Bhutan, Thailand, Vietnam, Malaysia.

Remarks. The sexual dimorphism in this species is more distinct than in other *Bombyx*. The eggs are laid on the branches of the host plants, with the eggs separated from each other.

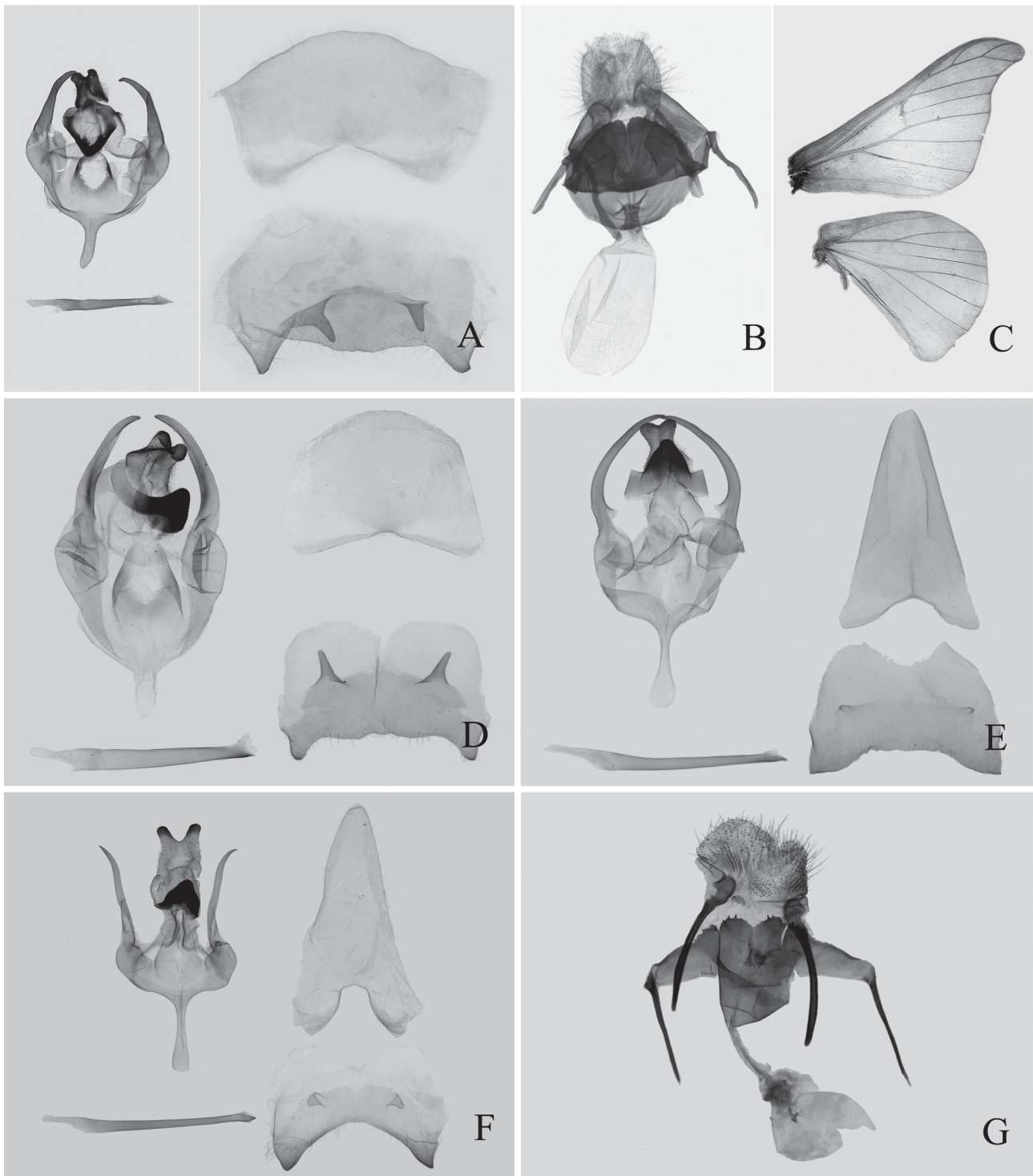


FIGURE 3. Wing venation and genitalia of *Bombyx* spp. A. *B. mori*, male (from artificial feeding in Guangzhou); B. *B. mori*, female (from artificial feeding in Guangzhou); C. *B. mori*, wing venation (from artificial feeding in Guangzhou); D. *B. mandarina*, male (Sichuan); E. *B. lemeepauli*, male (Guangxi); F. *B. huttoni*, male (Guangdong); G. *B. huttoni*, female (Guangdong).

II. *Gunda* Walker, 1862 (FIGURES 4–5)

Gunda Walker, 1862, *J. Proc. Linn. Soc. (Zool.)* 6: 176. Type species: *Gunda ochracea* Walker, 1862, by monotypy.

Norasuma Moore, 1872, *Proc. zool. Soc. Lond.* 1872: 575. Type species: *Norasuma javanica* Moore, 1872, by monotypy.

Aristhala Moore, 1878, *Proc. zool. Soc. Lond.* 1878: 704. Type species: *Aristhala hainana* Moore, 1878, by monotypy.

Clenora Swinhoe, 1899, *Ann. Mag. nat. Hist.* 3(7): 109. Type species: *Clenora engonata* Swinhoe, 1899, by monotypy.

Synonymized by Holloway (1987).

Clenora; West, 1932, *Novit. zool.*, 37: 215. Incorrect subsequent spelling of *Clenora* Swinhoe, 1899.

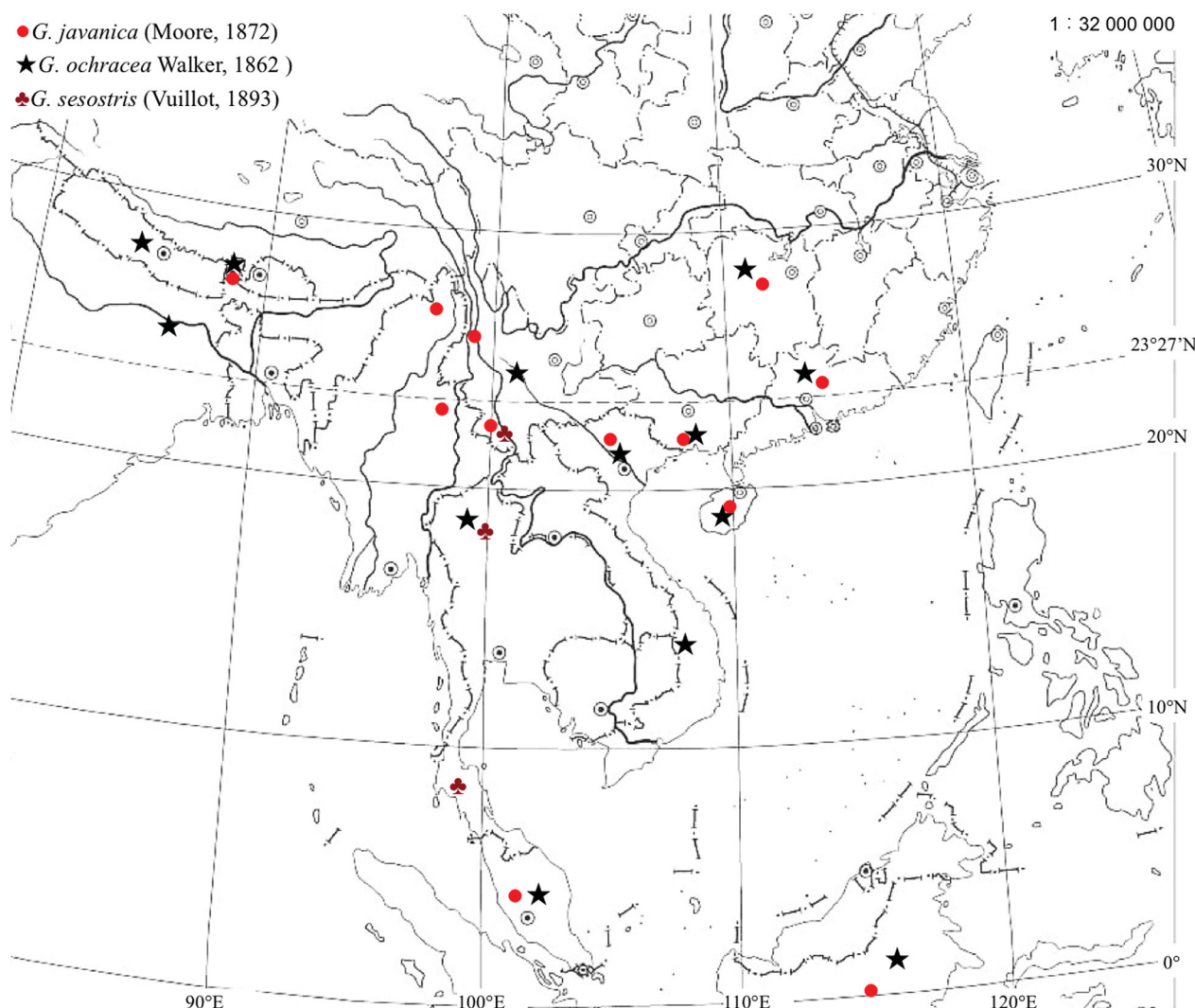
Hanisa Moore, 1879, *Proc. zool. Soc. Lond.*, 1879: 406. Type species: *Bombyx subnotata* Walker, 1859, by monotypy.

Synonymized by Holloway (1987).

Diagnosis. Characterized by the following features: wings reddish-brown, yellowish-brown or dark brown; forewing with M1 and R stalked, M stem clearly visible in discal cell; 2A of hindwing basally forked; tornus of hindwing usually with a prominent recurved tooth; uncus bifid; valvae hooked with apex produced into 2–3 teeth; shape and ornamentation of sternum VIII highly diagnostic. The sexual dimorphism is obvious, with the female larger and paler than the male..

Distribution. Oriental and SE Palearctic Regions.

Remarks. Roepke (1924) illustrated the larva of *G. proxima* as having the thoracic segments strongly swollen as in *Bombyx*. Holloway (1987) reported that Mell described the early stages of *G. engonata* (Swinhoe, 1899) in an unpublished manuscript. In this paper, three *Gunda* species are recorded from China (Map 12).



Map 2. Distribution of *Gunda* spp. mainly in China.

Key to the species of *Gunda* in China

1. Tornus of hindwing in male without a prominent recurved tooth. *G. sesostris*
- Tornus of hindwing in male with a prominent recurved tooth 2
2. Forewing with an oblique black line from basal 1/4 of costa to below apex *G. javanica*
- Forewing without an oblique black line from basal 1/4 of costa to below apex. *G. ochracea*

5. *Gunda javanica* (Moore, 1872) (FIGURES 4A–4B, 5A)

Norasuma javanica Moore, 1872, *Proc. zool. Soc. London* 1872: 376, pl. XXXIII, fig. 6. TL: “Java”. Holotype: female (OUMNH).

Gunda tonkinensis Lemée, 1950, *Contribution a l’etude des Lepidopteres du Haut-Tonkin (Nord-Vietnam) et de Saigon*: 36.

Type locality: Sundaland. Holotype: ?. Synonymized by Holloway, 1987.

Gunda javanica palawana Schultze, 1925, *Philipp. J. Sci.* 28: 569. “Palawan, Ulugan Bay, on Ship’s light” Holotype: ?.

Diagnosis. Characterized by the following features: forewing with an oblique black line arising from basal 1/4 of costa to below apex; antemedial and medial lines arched; postmedial line straight; submarginal line sinuate, curved inwards near costa; uncus deeply bifid; valva distally with two acute teeth.

Specimens examined. [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, 30 km southwest of Nanping town, 900 m, 21°43’N, 107°32’E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); [HAINAN] Baisha County (Yinggeling National NR): 1 male, 1.IX.2005, Min Wang leg. (SCAU); Wuzhishan City (Wuzhishan National NR, 18°53’N, 109°43’E, 1500 m): 1 male, 20.II–10.IV.2001, local collector leg. (MWM); 23 males and 1 female, 18–28.II.2003, Siniaev & his team leg. (MWM); [YUNNAN] Xishuangbanna Dai Autonomous Prefecture: 1 male, Puwen, 30 km southwest of Simao county, 900 m, 10–30.IV.2000, 22°30’N, 100°02’E, Brechlin’s local collector leg. (MWM); Yunlong County: 1 male, Mt. Wubaoshan, 3500 m, May to June 2000, local collector leg. (MWM).

Bionomics. *Ficus elastica* Roxb. ex Hornem., 1814 has been reported as its host plant in India. Adults have usually been captured in lowland rainforest localities.

Distribution. Mainland China (Hunan, Guangdong, Guangxi, Yunnan) and Hainan, Philippines (Palawan), Vietnam, Indonesia, Malaysia, Thailand, Myanmar, Sikkim, northeastern Himalayan region.

Remarks. The species is more uniform and darker brown than *G. ochracea* in the male. There is some variation in development of the paired lateral flanges of the 8th sternite across the range of the species.

6. *Gunda ochracea* Walker, 1862 (FIGURES 4C–4D, 5B)

Gunda ochracea Walker, 1862, *J. Linn. Soc. Lond. (Zool.)* 6: 177. TL: “Sarawak”. Holotype: female (OUMNH).

Aristhala hainana Moore, 1878, *Proc. Zool. Soc. London* 1878: 705. TL: “Hainan”. HT: male (BMNH).

Aristhala sikkima Moore, 1879, *Proc. Zool. Soc. London* 1879: 406, pl. 33, fig. 3. TL: “Darjeeling”. ST: male (fig’d) & female (BMNH).

Gunda leefmansii Roepke, 1924, *Tijd. Ent.* 67: 168, Taf. 2, fig. 4. TL: Padang, Sumatra. Holotype: female (MNHL). A junior synonym.

Diagnosis. Very similar to *G. javanica*, but can be distinguished by the following characters: forewing without an oblique black line arising from basal 1/4 of costa to beneath of apex; uncus shallowly bifid; valva distally with a slender, apically bifid process.

Specimens examined. [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, 30 km southwest of Nanping town, 900 m, 21°43’N, 107°32’E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); [HAINAN] Baisha County (Yinggeling National NR): 1 male, Tongyin Village, 4.XII.2005, Min Wang leg. (SCAU); Wuzhishan City (Wuzhishan National NR): 1 male, 18°53’N, 109°43’E, 1500 m, 20.II–1.III.2003, Siniaev & his team leg. (MWM); [YUNNAN] Jingdong County (Ailaoshan National NR): 1 male, 3500 m, September 1999, Wang & Li leg. (MWM).

Bionomics. The larval host plants are *Ficus elastica* Roxb. ex Hornem., 1814, *Ficus religiosa* Linn., 1753 and relatives. The species usually appears in winter.

Distribution. Mainland China (Hunan, Guangdong, Guangxi, Yunnan) and Hainan, Philippines, Vietnam, Malaysia, Indonesia, Thailand, Sikkim, Nepal, Sri Lanka, India, vast region from Southeast Asia to Sumatra, Borneo and the Philippines (Palawan).

Remarks. The variability of wings is distinct in different geographical areas, but the variability in genitalia characters has no firmly geographical basis.

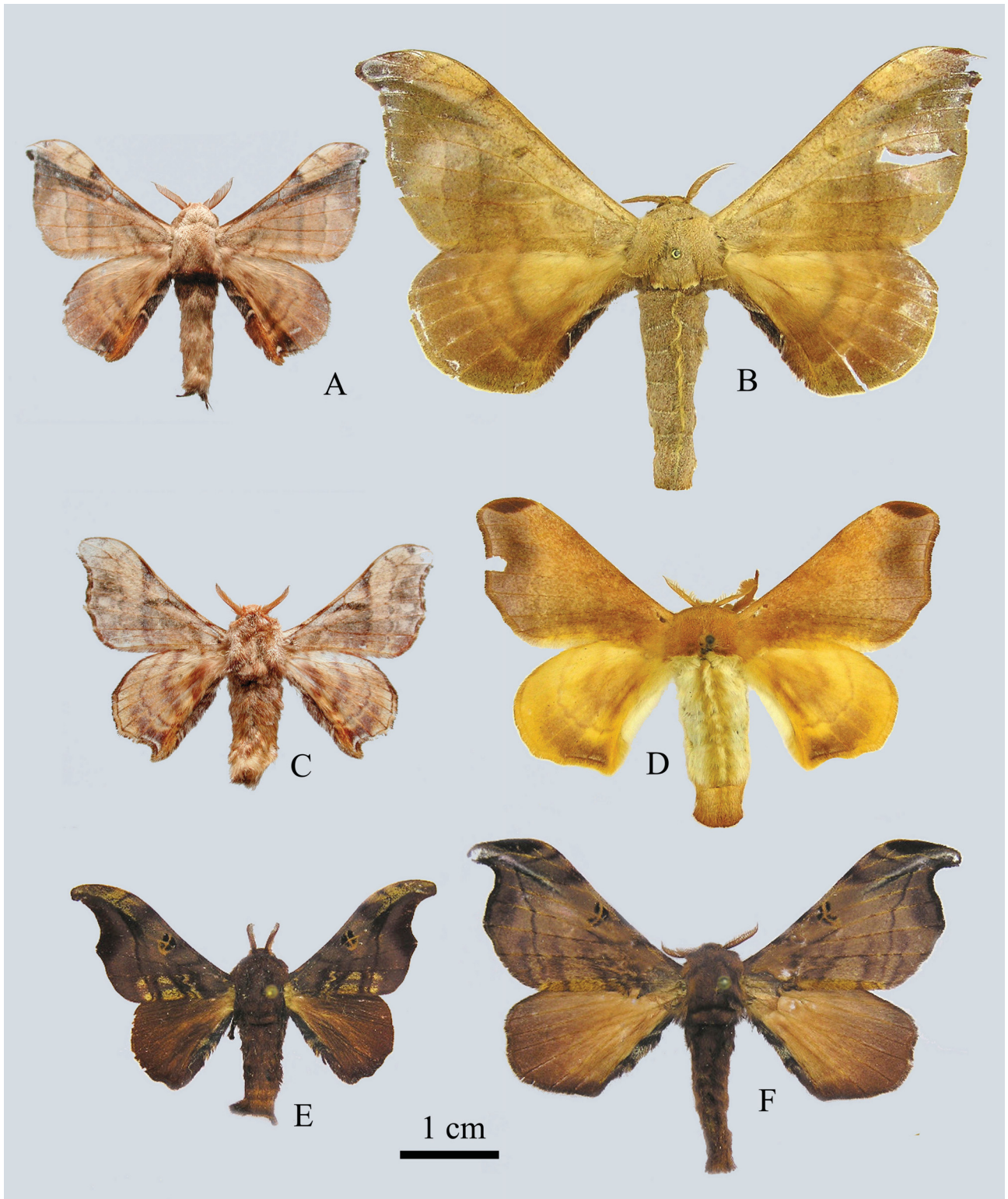


FIGURE 4. Adults of *Gunda* spp. A. *G. javanica*, male (Hainan); B. *G. javanica*, female (Myanmar); C. *G. ochracea*, male (Hainan); D. *G. ochracea*, female (Malaysia); E. *G. sesostris*, male (Thailand); F. *G. sesostris*, female (Indonesia).

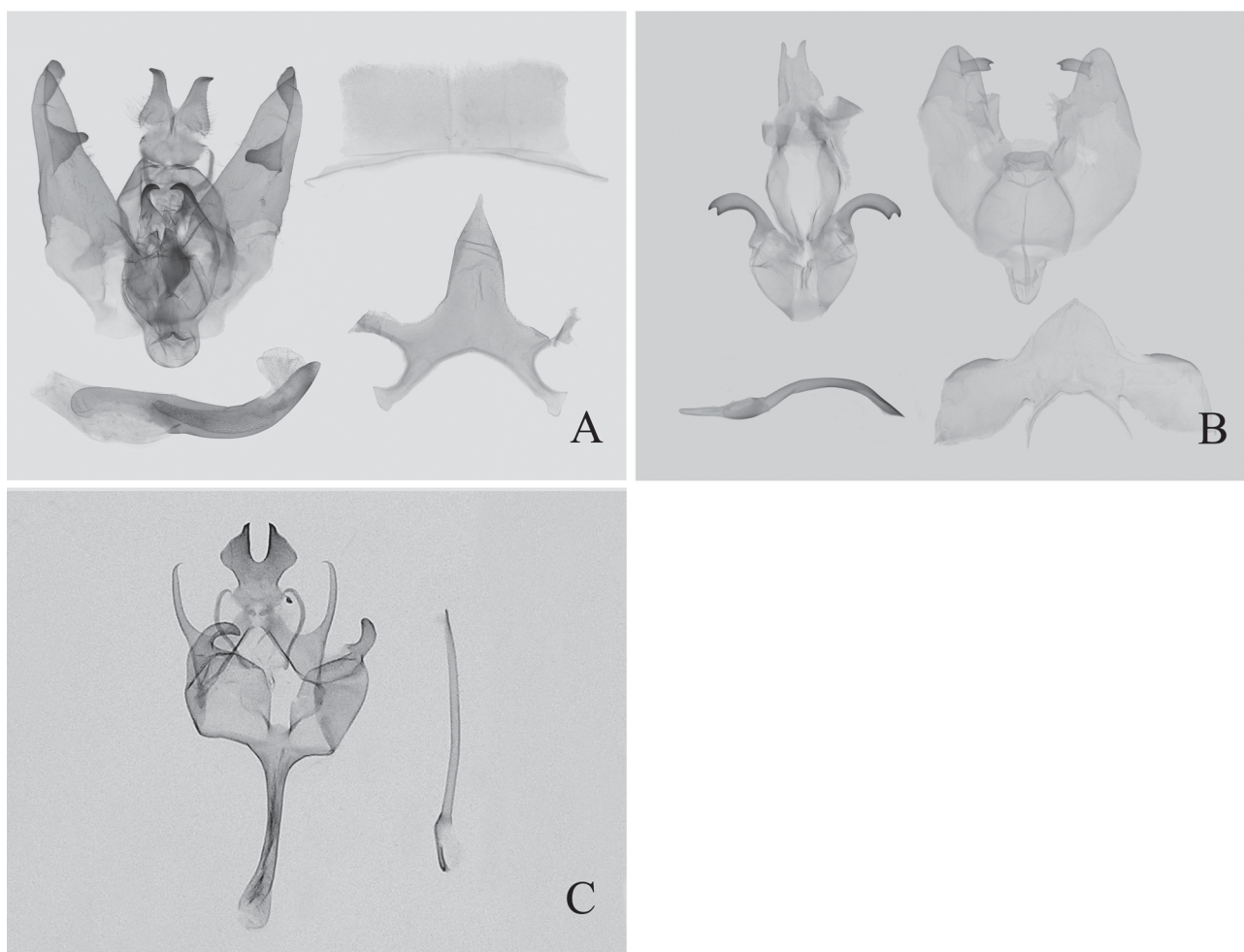


FIGURE 5. Male genitalia of *Gunda* spp. A. *G. javanica* (Hainan); B. *G. ochracea* (Hainan); C. *G. sesostris* (Indonesia).

7. *Gunda sesostris* (Vuillot, 1893) (FIGURES 4E–4F, 5C) **comb. nov.**

Micrattacus sesostris Vuillot, 1893, *Bull. Soc. ent. France*: 181. TL: “Borneo, provenant de Labuan”. Holotype (by monotypy): male (ZMHU) [examined].

Gunda proxima Roepke, 1924, **syn. nov.**, *Tijdschr. Ent.* 67: 162, figs 1, 2; pl. 1, figs 1–3; pl. 2, fig. 1. TL: Java. Syntypes: males and females (NHML) [examined].

Clenora epygrypa West, 1932, **syn. nov.**, *Novit. Zool.* 37: 215. TL: “Philippine Is., Luzon I., subprov. Benguet, Palali, 2,000 ft.”. Type: male (BMNH) [examined].

Theophoba ostruma Chu & Wang, 1993, **syn. nov.**, *Sinozoologia* 10: 225, fig.5 TL: Xishuangbanna, Yunnan, China. Holotype: male [IZCAS, photograph examined].

Diagnosis. Characterized by the following features: ground colour of wings dark purplish-brown; forewing with yellow spot near apex; black discal spot divided into four by a yellow X-shaped brand; inner margin with complex yellow patterns; uncus apically diamond-shaped, bifid, medial invagination “U” shaped; valva with a slender distal hook and a short sickle-shaped projection.

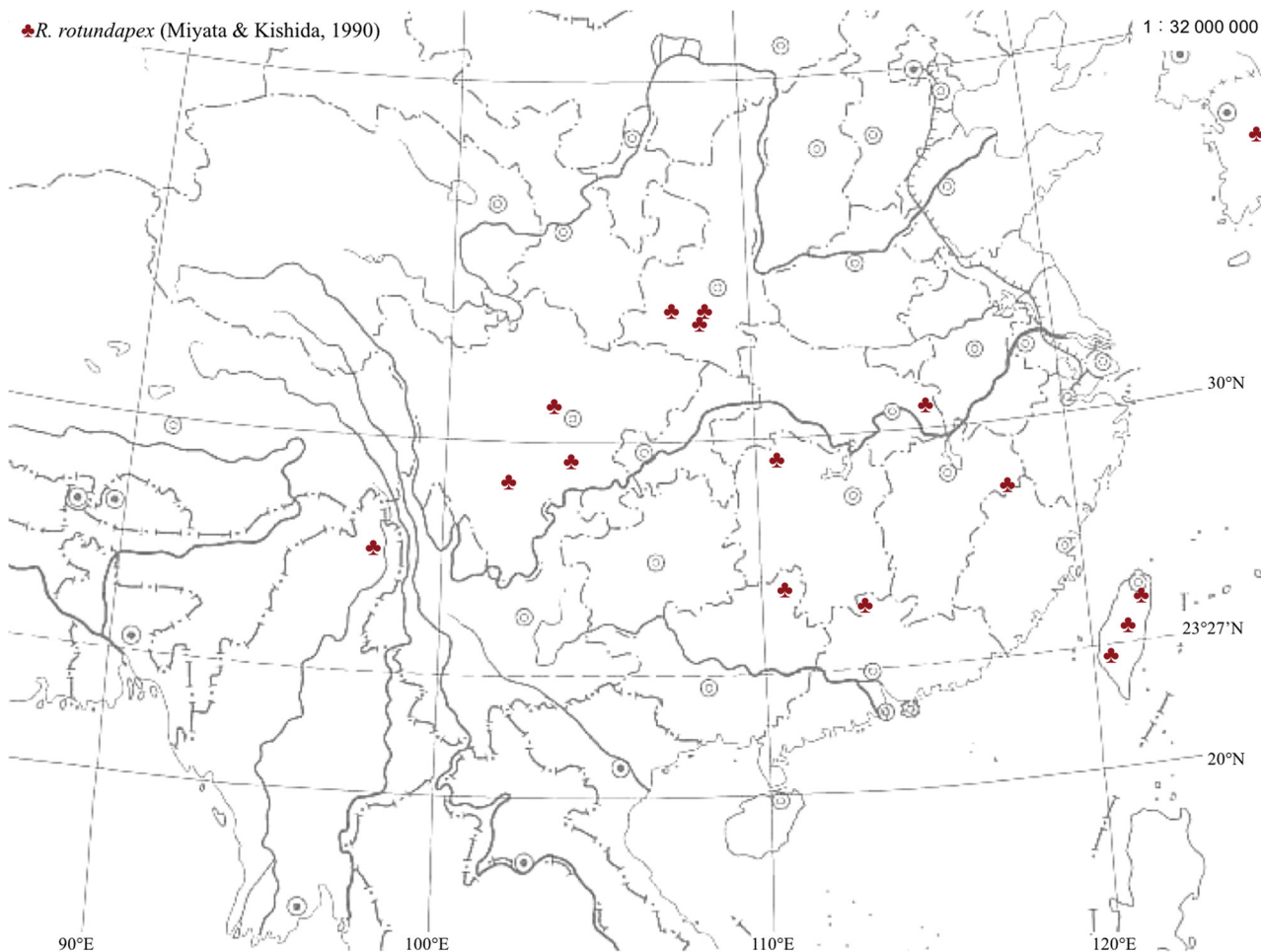
Specimens examined. [YUNNAN] Xishuangbanna Dai Autonomous Prefecture: 1 male, (holotype of *Theophoba ostruma*), 9.VI.1964, Bao-Lin Zhang leg. (IZCAS).

Bionomics. The larva host plant is unknown.

Distribution. Mainland China (Yunnan), Philippines (Palawan), Indonesia (Java, Sumatra), Thailand, NE India (Assam).

Remarks. This species is widely but rather sporadically distributed in South-east Asia. No other specimens have been collected in China after the specimen that was described as *Theophoba ostruma* (Chu & Wang, 1993). The taxonomic status of *sesostris* remained unclear until the holotype was found in ZMHU in 2013 by V.V.

Zolotuhin. It was described in *Micrattacus* Walker, 1855, now treated as a junior synonym of *Hylesia* Hübner, [1820], and so erroneously placed for a long time in Saturniidae, Hemileucinae, Hemileucini.



Map 3. Distribution of *Rotunda rotundapex* (Miyata & Kishida, 1990) in China and adjacent countries.

III. *Rotunda* Wang, X. & Zolotuhin, gen. nov. (FIGURE 6)

Type species: *Bombyx rotundapex* Miyata & Kishida, 1990, **here designated.**

Diagnosis. This genus can be distinguished from the other bombycine genera by the following characters: rounded wing shape and pattern; long, narrow and forked uncus; gnathos indistinct; aedeagus short and stout; and caudal process on the 8th abdominal segment of the mature larva obscure.

Description. Male. Head. Brown ochre, antennae bipectinate covered with fine micro setae, labial palpi rudimentary and short.

Thorax. Black ochre mixed with white hairs. Forewing yellow-ochre with rounded apex; veins distinct with M stem absent; postmedial line dark ochre, diffuse and weakly arched; submarginal line zigzag; basal area blackish brown mixed with white scales. Hindwing similar to forewing but paler and with a dark curved medial line and a dark zigzag submarginal line.

Abdomen. Yellow-ochre.

Male genitalia. Uncus long and forked, apex shortly bilobed; gnathos indistinct; valva small, with a long and slender process arising from the costa; juxta well sclerotized and fused with valva; saccus broad and short; aedeagus slightly curved, with a pair of small caudal processes; caudal margin of the 8th sternite bilobed and “V” shaped.

Female. Similar to male, but somewhat larger.

Female genitalia: Papillae anales short; antrum long and oval, somewhat sclerotized on the dorsal surface; ductus bursae bearing two pairs of lobes on the caudal margin of the ventral surface; corpus bursae oval, signum absent.

Etymology. From the Latin *rotunda* (= round), referring to the rounded wings.

Distribution. Mainland China (Jiangxi-Fujian border, Hubei, Hunan, Guangdong, Guangxi, Shaanxi, Sichuan) and Taiwan, Korea, Myanmar.

Remarks. The larva of this species is similar in appearance to those of *Bombyx mori* and *Rondotia menciiana*, but can be distinguished from the latter by the indistinct anal horn on the mature larva. The genus is here recorded from Myanmar for the first time (Map 3).

8. *Rotunda rotundapex* (Miyata & Kishida, 1990) comb. nov. (FIGURES 6A–6H)

Bombyx rotundapex Miyata & Kishida, 1990, *Japan Heterocerists' J.* 158: 142, figs 1–3. TL: “Taiwan, Nantou Hsien, Lushan spa (1200 m)”. Holotype: male (NSMT) [examined].

Bombyx shini Park & Sohn, 2002, **syn. nov.**, *Tinea* 17 (2): 67. TL: Korea, Gangwon Prov., Temp. Weona-sa, Cheolwon.

Diagnosis. For diagnostic characters, see the genus description. This species is medium sized, wingspan = 30–38 mm, male forewing length = 16–18 mm; antenna length = 5–7 mm; male body length = 15–17 mm.

Specimens examined. [TAIWAN] 1 male, Holotype deposited in NSMT with the label “male, Taiwan, Nantou Hsien, Lushan spa, 1200 m, 29.IV–1.V.1984, H. Yoshimoto”; 65 males and 1 female, from different counties of Taiwan (Taitung, Kaoshiung, Ilan, Taoyuan, Hualien, Nantou) (MWM); Yilan County: 1 male, Fushan Botanic Garden, 750 m, 30.V.2011, Shipher Wu leg. (TFRI); 1 female, Siyuanyako, 1950 m, 2.VI.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); Hualien County: 1 male, Ci'en, 1950 m, 19.VII.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 2 males, Luosao, 1100 m, 6.VI.2013, Shipher Wu & Wei-Chun Chang leg. (TFRI); Nantou County: 4 males, Aowanda, 1000 m, 9.V.2013, M. Owada, L. Shih & Y. Chen leg. (NSMT); [JIANGXI] Guixi County (Yingtian City): 67 males and 1 female, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, June 2003, Siniaev & his team leg. (MWM); 85 males and 4 females, Mts. Wuyishan, Jiangxi-Fujian border, 50 km southeast of Yingtian, 1600 m, 27°55'N, 117°25'E, May 2002, Siniaev & local collector leg. (MWM); 40 males and 1 female, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, May 2005, Siniaev & his team leg. (MWM); [HUBEI] Huanggang City: 13 males and 1 female, Tapiieh Shan (Mt. Dabieshan), middle June to August 1999, J. Li leg. (MWM); [HUNAN] Sangzhi County (Badagongshan National NR): 1 female, Mt. Tianpingshan, 11.V.2007, larvae collected by Liu-Sheng Chen, and pupated on May 18 and enclosed on May 29 (SCAU); [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, 3.VI.2001, Min Wang leg. (SCAU); 2 males, 30.VI.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 2 females, 1.VI.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 2 females, 30.VI.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 4 males, 15.V.2005, Liu-Sheng Chen leg. (SCAU); [GUANGXI] Xing'an County (Mao'ershan National NR): 4 males, 1200–1700 m, 13–16.V.2004, Mamoru Owada leg. (NSMT); [SHAANXI] Taibai County (Mts. Tsinling (Qinling), Mt. Taibaishan, Houzhenzi): 24 males and 4 females, 33°51'N, 107°49'E, 1600 m, 27.V–6.VI.1999, local collector leg. (MWM); 31 males and 1 female, 33°53'N, 107°49'E, 1500 m, June 2003, Viktor Sinyaev & his team leg. (MWM); Mts. Daba Shan (Tapa Shan): 11 males, 1000 m, Shou-Man village, 32°14'N, 108°34'E, 24–25.V.2000, Siniaev & Plutenko leg. (MWM); 3 males, 1800 m, 15 km south of Shou-Man village, 32°08'N, 108°37'E, summer 2000, local collector leg. (MWM); Fopin City (Mts. Qinling): 1 male, 1800 m, 33°35'N, 108°01'E, July 2005, team of Siniaev leg. (MWM); [SICHUAN] Leshan City: 2 males, Mt. Emeishan, 710 m, 1.VI.1990, J. Aoyama leg. (NSMT); Dujiangyan City (Mts. Qingcheng): 34 males, 60 km west of Chengdu, 1200 m, 15–25.VIII.2004, S. Murzin leg. (MWM); 178 males and 12 females, 70 km west of Chengdu, 1360 m, 26–30.VIII.2004, S. Murzin leg. (MWM); Luding County (Hailuoguo National NR): 1 male, 31.VII.2003, Min Wang leg. (SCAU); 2 males, 30.VII.2003, Min Wang leg. (SCAU); 21 males, Lao Lin Kou, 1900 m, 28°21'N, 103°26'E, 26.VI–12.VII.2008, Viktor Sinyaev leg. (MWM).

MYANMAR: 2 males, Kachin, 65 km northeast of Putao, Zi Yar Dam village, 1250 m, 18–21.V.1998, Murzin & Viktor Sinyaev leg. (MWM).

Bionomics. Adults appear from late April to July (Plate 3B–3C), and the larvae feed on the leaves of Moraceae. The larvae are quite variable in color with numerous black dots all over the body (Plate 3D–3E). Pupation is in a pale yellow cocoon (Plate 3F). In Taiwan, there is apparently a single generation per year and the species occurs at the elevations between 800 and 2100 m.

Distribution. Mainland China (Jiangxi-Fujian border, Hubei, Hunan, Guangdong, Guangxi, Shaanxi, Sichuan) and Taiwan, Korea, Myanmar.

Remarks. Although there are small morphological differences, the Korean population is here considered not to represent a separate species and so *Bombyx shini* is here synonymized with *R. rotundapex*. It is possible that the Korean population has recently been introduced with its larval hosts.

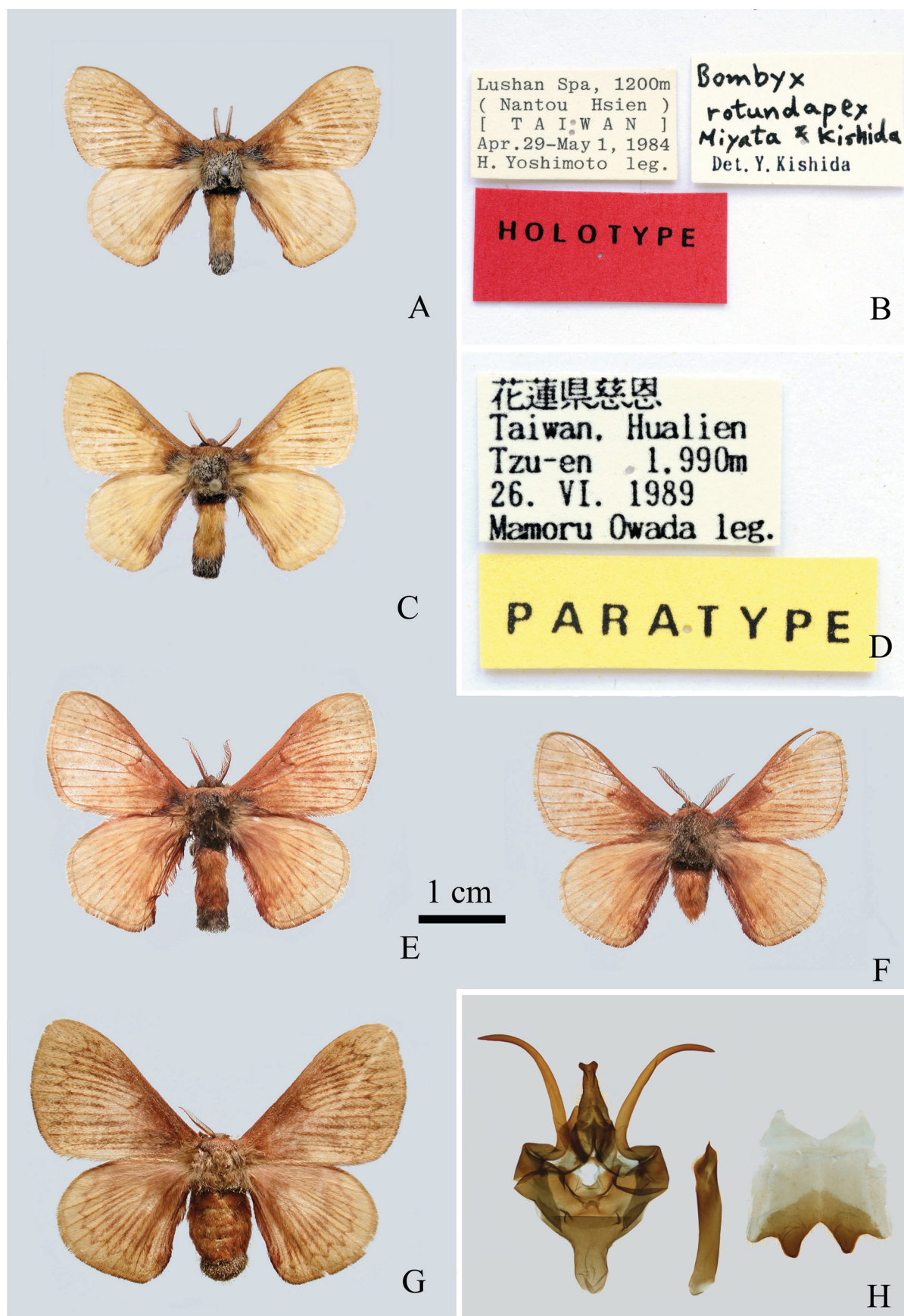


FIGURE 6. Adults, labels and male genitalia of *Rotunda rotundapex* (Miyata & Kishida, 1990). A–B. Male (Taiwan), holotype; C–D. Male (Taiwan), paratype; E. Male (Sichuan); F. Male (Guangdong); G. Female (Sichuan); H. Male genitalia (Sichuan).

IV. *Rondotia* Moore, 1885 (FIGURES 7–8)

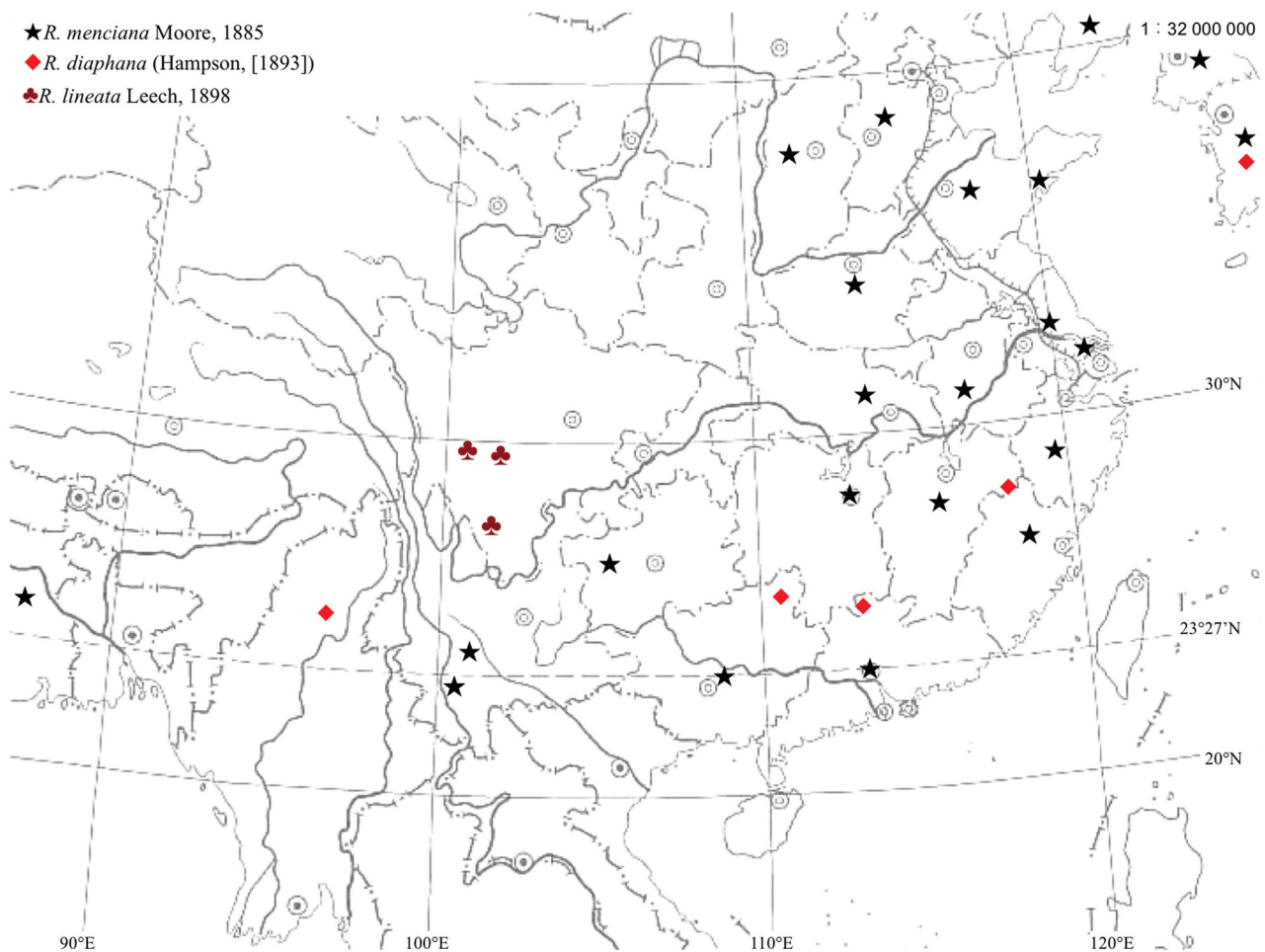
Rondotia Moore, 1885, *Ann. Mag. nat. Hist.* 15 (5): 491. Type species: *Rondotia menciiana* Moore, by monotypy.

Ectrocta Hampson, [1893], *Fauna Br. India* (Moths) 1: 33. Type species: *Ectrocta diaphana* Hampson, [1893], by original designation. Synonymized by Leech, 1898.

Diagnosis. Characterized by the following features: body slender, yellow or whitish-gray; forewing with outer margin concave below apex and a projection at the end of M_3 , antemedial and submarginal lines black and distinct, medial line a short black line across apex of discal cell; hindwing with antemedial line reduced to a black spot and postmedial line arched; uncus divided into three lobes; valva elongate, apex broader with a large and a small tooth; saccus short and swollen distally. Overall, the species of the genus resemble day-flying geometrid moths.

Distribution. Mainland China (Guangdong, Guangxi, Sichuan) and Taiwan, the Oriental Region and the eastern Mainland Asia except Europe.

Remarks. This genus was established by Moore (1885) based on *Rondotia menciiana* Moore, 1885. It consists of three species (Hampson, 1892; Seitz, 1924; Dierl, 1978; Chu & Wang, 1996): *R. lineata* Leech, 1889, *R. menciiana* and *R. diaphana* (Hampson, 1893), all three of which are here recorded from China (Map 4).



Map 4. Distribution of *Rondotia* spp. mainly in China.

Key to the species of *Rondotia* in China

1. Wings whitish-gray2
- Wings yellow. *R. menci*iana
2. Hindwing outer margin dark gray; postmedial line broad and distinct *R. diaphana*
- Hindwing outer margin yellow; postmedial line narrow and obscure *R. lineata*

9. *Rondotia menci*ana Moore, 1885 (FIGURES 7A, 8A)

*Rondotia menci*ana Moore, 1885, *Annals and Magazine of Natural History* 15 (5): 492. TL: “Province of Chehkiang [= Zhejiang], N. China” (BMNH) [examined].

Rondotia lurida Fixsen, 1887, *Mémoires sur les Lépidoptères* 3: 346, pl. 15, fig. 8.. TL: Korea. Type in ZISP [examined].

Diagnosis. Distinguished from the other two species by the following characters: forewing yellow with antemedial and postmedial lines sinuate; medial line crescent-shaped with apex edged black; hindwing yellow, tornus edged with black; aedeagus bent near base.

Specimens examined. [SHANGDONG] 3 males, 5.IX.1925 (MWM); 1 male, 9.IX.[1925] (MWM); 2 males, Tsingtau (Qingdao) (ZFMK); 1 Male, Schantung (Shandong), Miss.-Mus. Steyl (ZFMK); [JIANGSU] Yangzhou City: 1 male, campus of Yangzhou University, 1.VII.2006, Yu-Zhou Du leg. (SCAU); 5 males, Soochow (Suzhou)-Berge, Prov. Kiangsu (Jiangsu), 28.VII.1929, H. Höne leg. (ZFMK); [ANHUI] Huangshan County: 5 males and 3 females, Houxi Town, larvae collected on 29.VI.2009 and bred to adults by Guo-Hua Huang (HUNAU); [HUNAN] Changsha City: 4 males and 1 female, Donghu Town, larvae collected on 18.VI.2014 and bred to adults by Guo-Hua Huang, (HUNAU); [GUANGDONG] Guangzhou City: 1 male, campus of South China University, 2.VII.2014, Xing Wang leg. (HUNAU); 6 males, Syoziro Asahina’s collection, donation, 1998 (NSMT).

Bionomics. *Morus* spp. have been reported as the larval host (Zhu & Wang, 1996). The adults are on the wing from June to September (Plate 3G). The larvae are white with numerous black dots on the body (Plate 3H). The pupa is enclosed in pale yellow cocoon (Plate 4A–4B).

Distribution. Mainland China (Liaoning, Shandong, Jiangsu, Zhejiang, Hebei, Anhui, Jiangxi, Fujian, Shanxi, Henan, Hubei, Hunan, Guangdong, Guangxi, Shannxi, Gansu, Sichuan, Yunnan) and Hainan, India, North Korea, South Korea, Japan.

Remarks. This species is a very important pest to the sericulture industry in China, this species. Over 50 papers on its biological characters and ecological control have been published in China (e.g. Dai *et al.*, 1988; Xu *et al.*, 1994). The flavonoids from its cocoon were reported on in detail by Hirayama *et al.* (2013).

10. *Rondotia diaphana* (Hampson, [1893]) (FIGURES 7B, 8B)

Ectrocta diaphana Hampson, [1893], *Fauna of British India including Ceylon and Burma Moths* 1: 33, fig. 18. TL: [Myanmar] “Momeit, Burma”. Syntypes: (BMNH) [examined].

Diagnosis. Distinguished from other two species by the following characters: forewing white with many dark and pale gray fasciae; antemedial line arched and submarginal line wavy, the shade between the postmedial lines broader; medial line short and straight; outer margin edged with pale gray; hindwing with postmedial line broader and sinuate; outer margin edged with pale gray; aedeagus bent at 1/3 distance from apex.

Specimens examined. [JIANGXI] Guixi County (Mt. Wuyishan): 1 male and 1 female, Jiangxi-Fujian border, 50 km southeast of Yingtan, 1600 m, 27°56’N, 117°25’E, June 2002, Siniaev & local collector leg. (MWM); [GUANGDONG] Ruyuan County (Nanling National NR): 2 males, about 400 m altitude, 16.VI.2004, Min Wang & Guo-Hua Huang leg. (SCAU); [GUANGXI] Xing’an County (Mao’ershan National NR): 1 male, about 400 m altitude, 1.VII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU);

Bionomics. Adults fly during the day in June and July. Larval host unknown.

Distribution. Mainland China (Jiangxi-Fujian border, Guangdong, Guangxi), South Korea, Myanmar.

Remarks. This species was listed from Ichang and 30 miles north of Ichang, China by Leech (1898) and in 2003–2004, was collected in Mao’ershan NR in Guangxi Province and Nanling NR in Guangdong Province (Wang *et al.*, 2009).

11. *Rondotia lineata* Leech, 1898 (FIGURES 7C, 8C)

Rondotia lineata Leech, 1898, *Trans. ent. Soc. Lond.*: 273. TL: "Western China ... at Moupin, Wa-shan, Chia-kou-ho, Wa-ssu-kow, Chia-ting-fu, and Chung-king". Syntypes: (BMNH) [examined].

Diagnosis. This species is very similar to *R. diaphana*, but can be distinguished by paler wings, thinner forewing antemedial and submarginal lines, obscure postmedial line, 1/3 of basal inner margin with a dark dot on the inner edge of the hindwing at 1/3 from the base, and the medially bent aedeagus

Specimens examined. [SICHUAN] Luding County: 2 males, Moxi Town, 19.VII.2009, Min Wang & Guo-Hua Huang leg. (HUNAU); Xichang City: 1 male, mountains near Ningyuanfu (MWM); Yajiang County: 2 males, Siao-Lou (Xi'eluoxiang Town, Yajiang County, Garze Prefecture), Chasseurs Indigènes du P. Dejean, 1903 (ZFMK).

Bionomics. Larval host unknown.

Distribution. Mainland China (Sichuan).

Remarks. This species is endemic to Sichuan Province, with specimens so far collected from only three counties.

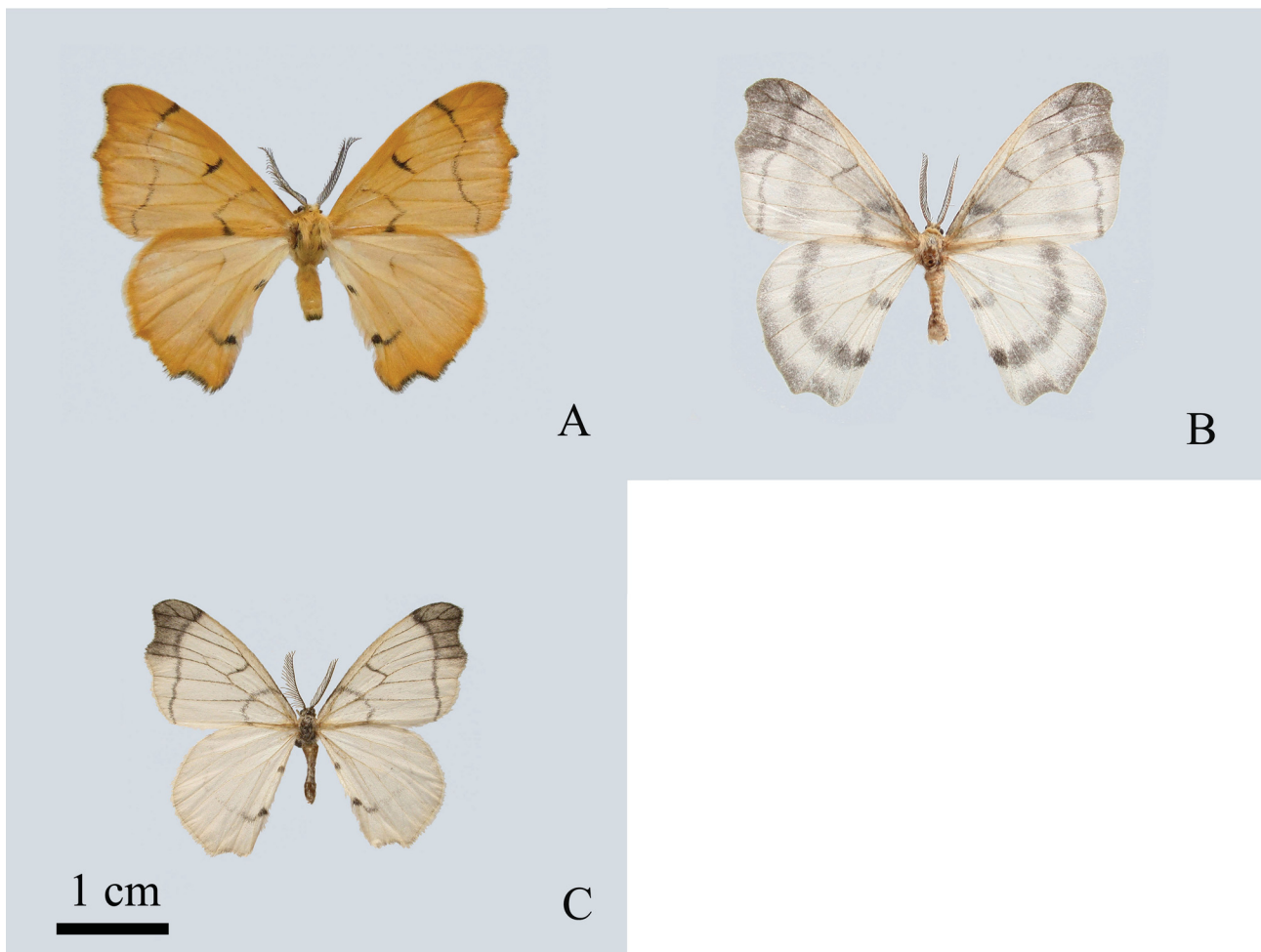


FIGURE 7. Adult males of *Rondotia* spp. A. *R. menciana* (Jiangsu); B. *R. diaphana* (Guangxi); C. *R. lineata* (Sichuan).

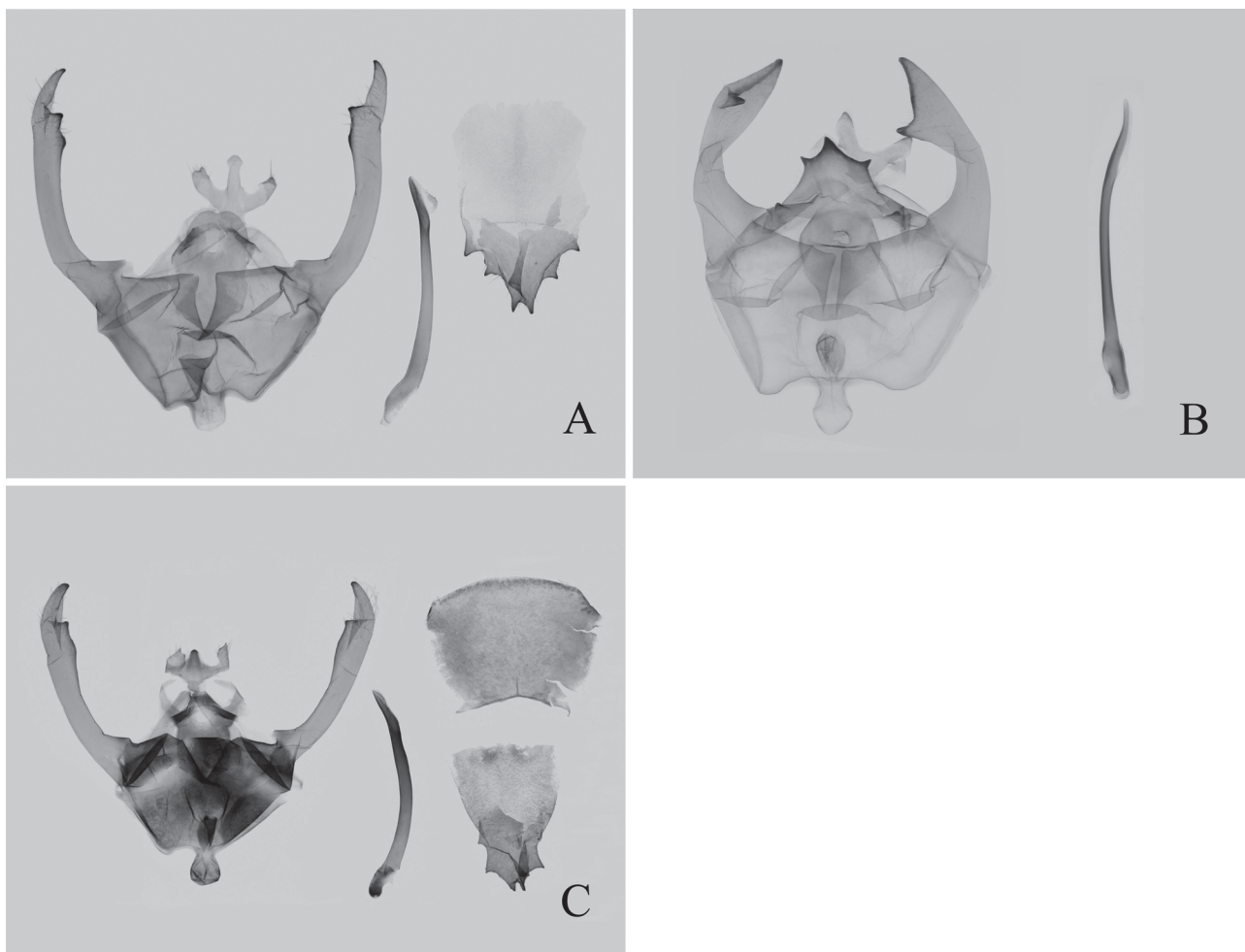


FIGURE 8. Male genitalia of *Rondotia* spp. A. *R. menciana* (Jiangsu); B. *R. diaphana* (Guangxi); C. *R. lineata*, (Sichuan).

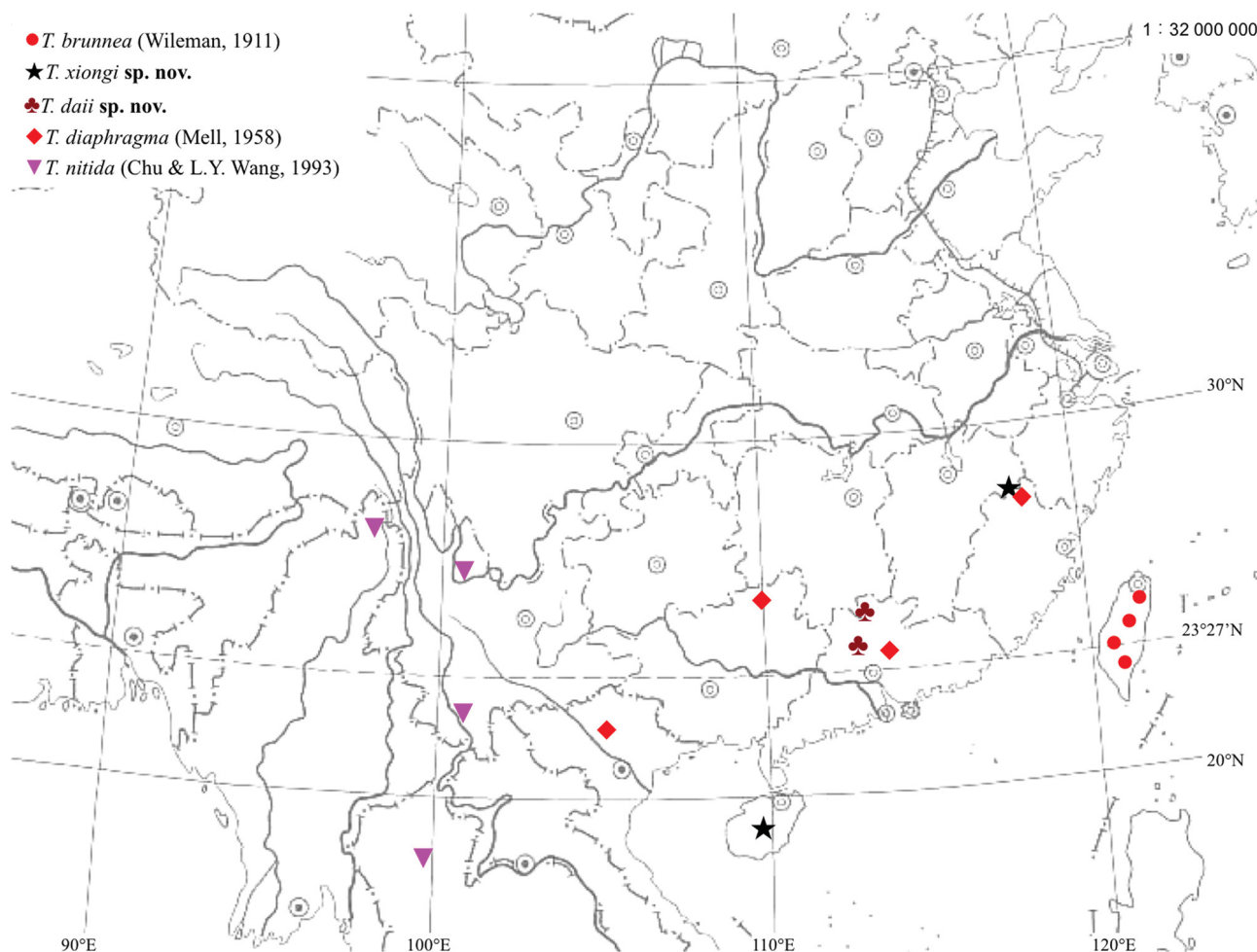
V *Triuncina* Dierl, 1978 (FIGURES 9–10)

Triuncina Dierl, 1978, *Spixiana* 1 (3): 246. Type species: *Trilocha brunnea* Wileman, 1911, by monotypy.

Diagnosis. Characterized by the following features: wings reddish brown; forewing apex blunt, outer margin straight; hindwing inner margin with a complex pattern; uncus small and stick-like; socii strongly modified into flattened pyramidal or ovoid processes laterally on the tegumen; valvae short hooked; saccus well-developed; aedeagus slender and long.

Distribution. Oriental Region.

Remarks. The species have very local distributions and genital dissection is strongly recommended to confirm identifications due to strong external similarity. Five species are here recorded from China (Map 5), of which two are described as new.



Map 5. Distribution of *Triuncina* spp. mainly in China

Key to the species of *Triuncina* in China

- | | | |
|----|---|----------------------|
| 1. | Socii pointed | .2 |
| - | Social rounded. | .4 |
| 2. | Uncus not bifid. | .3 |
| - | Uncus bifid. | <i>T. nitida</i> |
| 3. | Saccus swollen apically. | <i>T. brunnea</i> |
| - | Saccus not swollen apically | <i>T. diaphragma</i> |
| 4. | Saccus longer, slender, slightly swollen apically, about 1/3 length of the whole male genitalia | <i>T. xiongi</i> |
| - | Saccus shorter, thick, constricted basally, about 1/5 length of the whole male genitalia | <i>T. daii</i> |

12. *Triuncina brunnea* (Wileman, 1911) (FIGURES 9A–9D, 10C)

Trilocha brunnea Wileman, 1911, *The Entomologist*, 44 (3): 176. TL: [Taiwan] "Rantaizan (7500 ft)". Holotype: male (BMNH) [examined].

Ocinara diaphragma formosana Mell, 1958, *Dtsch. Ent. Z.*, 5: 211. TL: [Taiwan] "Zentralformosa (Shis)". Holotype: male (ZMHU) [examined]. Synonymized by Dierl, 1978.

Ocinara brunnea: Stuttgart, 1933, *In* Seitz, *Macrolep. World*, 10: 437.

Diagnosis. Characterized by the following features: forewing apex slightly acute; uncus narrowly triangular, finger-shaped and longer than the small rounded socii; saccus short and stout, apically swollen.

Specimens examined. [TAIWAN] 1 male, Holotype deposited in BMNH with the label “Type, *Trilocha brunnea* sp. n., Type, Rantaizan, Formosa, 7500 ft, 11.V.1909, A.E. Wileman, 1792 F, Wileman Coll. B. M. 1929-261, Bombycidae, genitalia slide, No.2”; 1 male with the label “Baibara, Kikuchi, Type Matsumura, *Ocinaria taiwana*”; 1 male with the label “Shis A 5 6, Formosa, H. Sauter, V.–VI.1912, *Ocinara diaphragma formosana* Mell, Type = *Triuncina brunnea* (Wileman), rev. W. Dierl 1977, *Ocinara brunnea* Wileman, Strand det.”; Zhanghua County: 4 males, Lianhua Chi, 11.VIII.2010, Guo-Hua Huang leg. (HUNAU); Yilan County (Fushan Botanic Garden, 750 m): 3 males, 23.VIII.2010, Guo-Hua Huang & Shipher Wu leg. (HUNAU); 1 male, 12.XI.2010, Shipher Wu leg. (TFRI); 1 male, 20.II.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, 9.I.2012, Shipher Wu leg. (TFRI); Yilan County (Tianwan, Mingchi, 1050 m): 1 male, 14.XI.2012, Shipher Wu leg. (TFRI); New Taipei County (Fushan, Wulai): 4 males, 400 m, 23–25.VIII.1990, Mamoru Owada leg. (NSMT); 1 male, 310 m, 2.X.2010, Shipher Wu & Wei-Chun Chang leg. (TFRI); 170 males from different counties of Taiwan (Taitung, Taoyuan, Tai-Chung, Kaoshiung, Ilan, Nantou, Miaoli, Chiayi) (MWM); Nantou County: 1 male, Renlun, 1400 m, 22.IV.2010, Shipher Wu leg. (TFRI); 1 male, Hewang, 1600 m, 28.X.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 22.XI.2011, Shipher Wu leg. (TFRI); 1 male, Meifeng, 2100 m, 14.II.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 14.VIII.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Tsueifeng, 7.X.2012, Jing-Fu Tsai leg. (TFRI); 1 male, Aowanda, 8.XI.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); Hualien County: 1 male, Ci'en, 1950 m, 28.VI.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Tianxiang, 6.VI.2013, Shipher Wu & Wei-Chun Chang leg. (TFRI).

Bionomics. *Ficus microcarpa* Linn., 1781 (Moraceae) is recorded as the larval host plant. Adults are on the wings through the year and fly at elevations from 400 to 2000 m (Plate 4C–4D).

Distribution. Taiwan.

Remarks. *T. brunnea* was transferred to the genus *Ocinara* Walker, 1856 by Strand (1922) and *Ocinara diaphragma formosana* Mell, 1958 was synonymized with it by Dierl (1978). In the Sapporo Museum, we checked the specimens bearing labels with the name “*Ocinaria taiwana* Matsumura” from Baibara in Formosa (Central Taiwan), but we have been unable to locate a published description of this name; however, as the specimen (Fig. 9A, 9B) was collected in 1925 the name, if published would postdate, and thus be a junior synonym of *brunnea*. Chu & Wang (1993, 1996) incorrectly synonymized *Triuncina cervina* (Walker, 1865) with *Ocinara brunnea* and placed it once again in genus *Ocinara*. However, *T. cervina* is a valid species endemic to Nepal and unknown so far from Mainland China and Taiwan.

13. *Triuncina xiongi* Wang, X. & Zolotuhin, sp. nov. (FIGURES 10A, 10D)

Ocinara brunnea Wileman, 1911: Chu & Wang, 1993, *Sinozoologia*, 10: 229; Chu & Wang, 1996, *Fauna Sinica Insect*, 5: 39. Misidentification (in part).

Type locality: Muji Village, Yinggeling National NR, Hainan Province, China.

Diagnosis. *T. xiongi* is very similar to *T. diaphragma*, but can be distinguished from the following characters: forewing dark ochre; inner margin of hindwing straight; uncus shorter than the long triangular socii; saccus long, constricted basally.

Description. Male wingspan: 19–21 mm; forewing length: 12–14 mm; antenna length: 4–6 mm; body length: 13–15 mm.

Head. Reddish brown; antennae bipectinate to tip.

Thorax. Prothorax with long, brown and black hairs. Fore- and hindwings brownish-black, thinly scaled; venation conspicuous; outer margin and inner margin with strong fringes. Forewing with costal margin with two dark spots near apex; transverse lines not obvious; apex rounded; outer margin straight. Hindwing basally with red-brown long hairs; outer margin near tornus slightly concave; inner margin with black and white stripes. Forewing underside darker, transverse lines not obvious; hindwing underside discal cell with a small black spot.

Abdomen. Dark brown

Male genitalia. Sternite 8th trapezoidal; posterior margin strongly concave, "V" shaped with two incurved apical hooks; posterior corners with two small recurved serrations; anterior corners produced into two short and apically rounded processes. Tergite 8 posteriorly narrowly rounded; anterior margin centrally concave; both sides opened outwards and upturned. Uncus long and slender, parallel-sided, apically narrowed and minutely bifurcate;

socii falciform, longer than uncus, with acute, downcurved apices; tegumen broad; valva hooked, slender, elongated, only reaching uncus base, basal apodemes of valves with scattered bristles; saccus slender, as long as valvae, terminally somewhat inflated; aedeagus thin, apex with curved cornuti on one side; vesica with small cornuti and scobination.

Female. Unknown.

Specimens examined. [HAINAN] Holotype, male, Muji Village, Yinggeling National NR, Hainan Province, China, 22.X.2005, Wei Xiong leg. (HUNAU); Paratypes, [HAINAN] 1 male, same data to holotype (SCAU); [JIANGXI] Guixi County (Yingtian City, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E): 22 males, June 2003, Siniaev & his team leg. (MWM, one with GP 8979); 6 males, June 2003, Siniaev & his team leg. (MWM, one of them with GP 8979); 1 male, April to June 2004, Siniaev & his team leg. (MWM); 1 male, April 2004, Siniaev & his team leg. (MWM); 3 males, July 2004, Siniaev & his team leg. (MWM); 3 males, June 2005, Siniaev & his team leg. (MWM); Yingtian City (Mt. Wuyishan, Jiangxi-Fujian border, 50 km southeast of Yingtian, 1600 m, 27°56'N, 117°25'E): 19 males, May 2002, Siniaev & local collectors leg. (MWM, one with GP 8979); 1 male, June 2002, Siniaev & local collectors leg. (MWM, GP 9480).

Bionomics. The larval host is unknown.

Etymology. The species name is dedicated to Mr. Wei Xiong, who collected the holotype.

Distribution. Mainland China (Jiangxi, Fujian) and Hainan Island.

Remarks. Chu & Wang (1993, 1996) misidentified this species and the next as *T. brunnea* (Wileman, 1911), which they recorded from Hainan, Guangdong, Jiangxi and Fujian Provinces. However, *T. brunnea* is a Taiwanese endemic.

14. *Triuncina daii* Xing Wang & Zolotuhin, sp. nov. (FIGURES 10B, 10E)

Ocinara brunnea Wileman, 1911: Chu & Wang, 1993, *Sinozoologia*, 10: 229; Chu & Wang, 1996, *Fauna Sinica Insect*, 5: 39. Misidentification (in part).

Type locality: Nanling National NR, Ruyuan County, Guangdong Province, China.

Diagnosis. Very similar to *T. brunnea*, but can be distinguished by the following characters: uncus finger-shaped and less than 1/2 length of the socii; valva longer than uncus, slender and slightly curved; saccus long and slender, slightly swollen apically.

Description. Male wingspan: 32–34 mm; forewing length: 15–17 mm; antenna: 5–7 mm; body: 17–19 mm.

Head. Reddish brown; antenna bipectinate to tip with 28–30 flagellomeres.

Thorax. Forewing brownish-yellow; costal margin with two dark spots; antemedial line double and unclear; medial line double and wavy; apex blunt; below apex a dark oblique transverse stripe. Hindwing darker; transverse lines not so obvious; inner margin with a long brown and yellow stripe. Underside of forewing darker, with vague transverse lines; underside of hindwing with discal cell with a small black spot; tornus with reddish brown spot; fringes reddish brown.

Abdomen. Long and robust.

Male genitalia. Sternite 8 polygonal, posterior margin strongly concave medially, V-shaped, each side with a sharply ventrally-recurved acute hook; postero-lateral margins with two laterally directed slightly curved acute hooks; anterior margin with two short and apically rounded processes. Tergite 8 posterior margin rounded; anterior margin medially shallowly concave, both sides turned outwards and up. Uncus finger-shaped, apically rounded and less than 1/2 length of the socii; socii elongated and blade-like, the apex slightly recurved; tegumen broad; valva broad basally, sickle-shaped distally, only reaching uncus base, basal apodemes of valvae with scattered bristles; saccus slender, length almost equal to valva, apically slightly inflated; aedeagus thin, basally concave, distally apex slightly curved, with curved cornuti laterally; vesica internally with small scoli.

Female. Unknown.

Specimens examined. [GUANGDONG] Holotype, male, Nanling National NR, Ruyuan County, Guangdong Province, China, 15.III.2002, Guo-Hua Huang leg. (HUNAU). Paratypes, [GUANGDONG] Ruyuan County (Nanling National NR): 2 males, 3.VI.2001, Min Wang leg. (SCAU); 2 males, 22.VI.2003, Min Wang & Guo-Hua Huang leg. (HUNAU & KUM); 1 male, 18.VI.2004, Min Wang & Guo-Hua Huang leg. (HUNAU); 3 male, 20.VI.2004, Guo-Hua Huang leg. (SCAU); 1 male, 30.VIII.2003, Guo-Hua Huang leg. (KUM); 2 males, 31.V.2006, Liu-Sheng Chen leg. (SCAU); 5 males, 21.VI.2008, Min Wang & Hou-Shuai Wang leg. (SCAU); 4 males, 25.VI.2008, Min Wang & Hou Shuai Wang leg. (SCAU); Yingde County (Shimentai National NR): 3 males, 18.IV.2003, Guo-Hua Huang leg. (HUNAU).

Bionomics. The larval host is unknown.

Etymology. The species name is dedicated to Dr. Liang-Ying Dai, the first author's supervisor from 2010 to 2012.

Distribution. Mainland China (Guangdong).

Remarks. This species has been collected only from Guangdong province. See also the remarks under *T. xiongi*.

15. *Triuncina diaphragma* (Mell, 1958) (FIGURES 9E–9G, 10F)

Ocinara diaphragma Mell, 1958, *Dt. Ent. Z.*, 5: 210. TL: [China] “Mahntsishan (N-Kuangtung, 25°N)”. Holotype: male (ZMHU) [examined].

Ocinara nitidoidea Chu & Wang, 1993, *Sinozoologia*, 10: 232. TL: Fujian, China. Synonymized by Zolotuhin & Witt, 2009

Diagnosis. Very similar to *T. xiongi*, but can be distinguished by the following characters: inner margin of hindwing slightly angled at tornus; uncus longer than broadly rounded socii; saccus shorter and not apically swollen.

Specimens examined. [FUJIAN] Wuyishan City (Wuyishan National NR): 1 male, May 2002, Siniaev & local collectors leg. (MWM); [GUANGXI] Longsheng County: 1 male, Jiangdi Town, 400–500 m, 22.VIII.2012, Min Wang leg. (SCAU).

Bionomics. The larval host is *Morus alba* Linn., 1753.

Distribution. Mainland China (Fujian, Guangdong, Guangxi), Vietnam.

Remarks. This species was placed in genus *Ocinara* by Mell (1958) and specimens from China were described by Chu & Wang (1993) as *Ocinara nitidoidea*, which was later synonymized by Zolotuhin & Witt in 2009.

16. *Triuncina nitida* (Chu & Wang, 1993), comb. nov. (FIGURES 9H, 10G)

Ocinara nitida Chu & Wang, 1993, *Sinozoologia*, 10: 231. TL: Yunnan, China.

Diagnosis. Very similar to *T. brunnea*, but can be distinguished by the following characters: hindwing tornus edged with yellow; uncus bifurcate; valva wider and terminating in two hooks; saccus short.

Specimens examined. [YUNNAN] Yongsheng County: 1 male, holotype, 7.VII.1984, Da-Jun Liu leg. (IZCAS); Simao County: 1 male, paratype, 7.V.1980, Lin-Yao Wang leg. (IZCAS) (Notes: Those two specimens were not examined, the data was taken from the original description). MYANMAR (Burma): 1 male, 21 km E Putao, Nan Sa Bon village, 550 m, 1–5.V.1998, Murzin & Sinjaev leg. (MWM).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Yunnan), Myanmar, Thailand.

Remarks. So far, the holotype and paratype are the only specimens that have been collected from China. The species is here recorded from Myanmar for the first time.

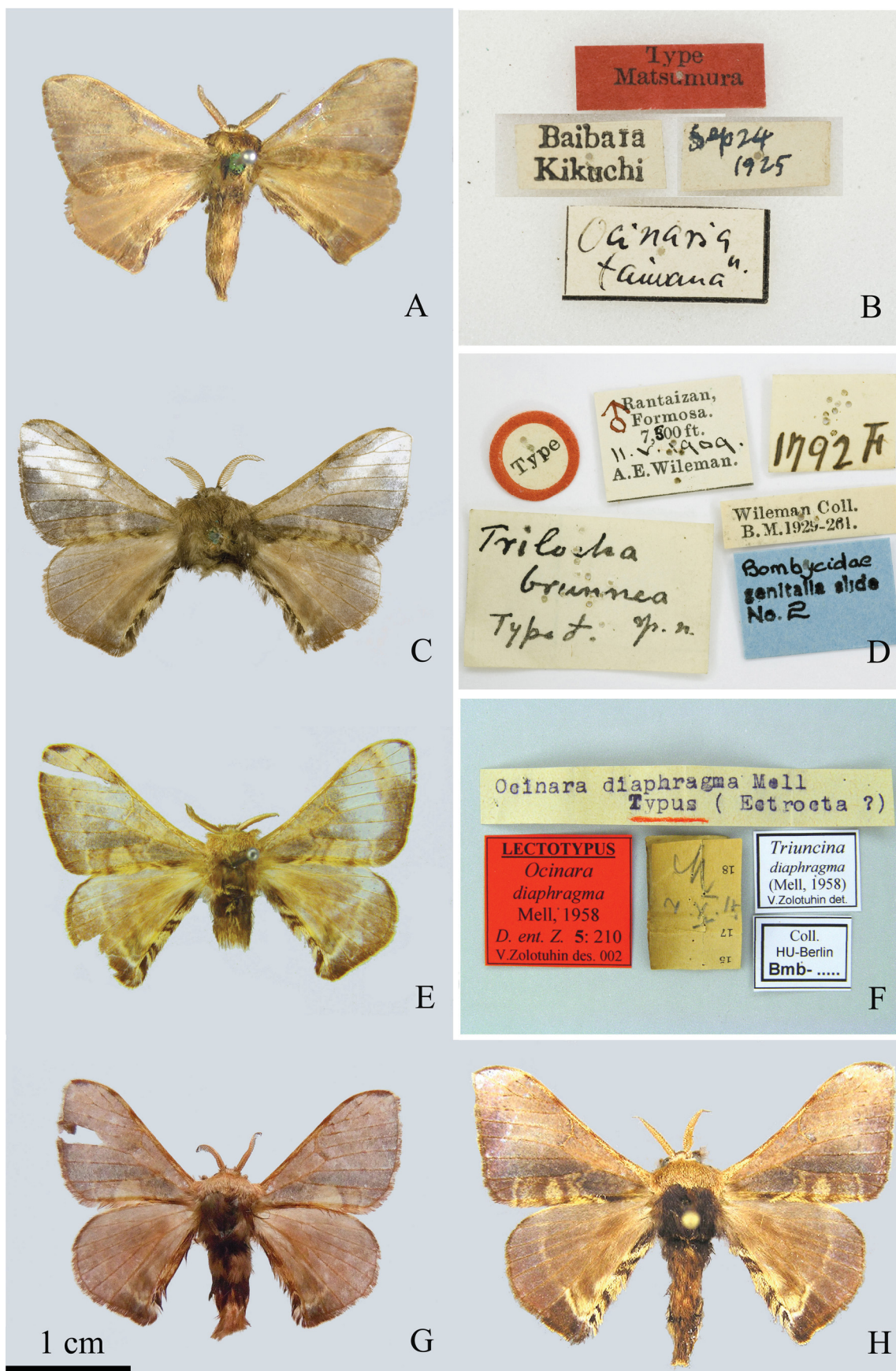


FIGURE 9. Adult males and labels of *Triuncina* spp. A–B. *T. brunnea* (Taiwan), type; C–D. *T. brunnea* (Taiwan), type; E–F. *T. diaphragma* (Taiwan), type; G. *T. diaphragma* (Guangxi); H. *T. nitida* (Myanmar).

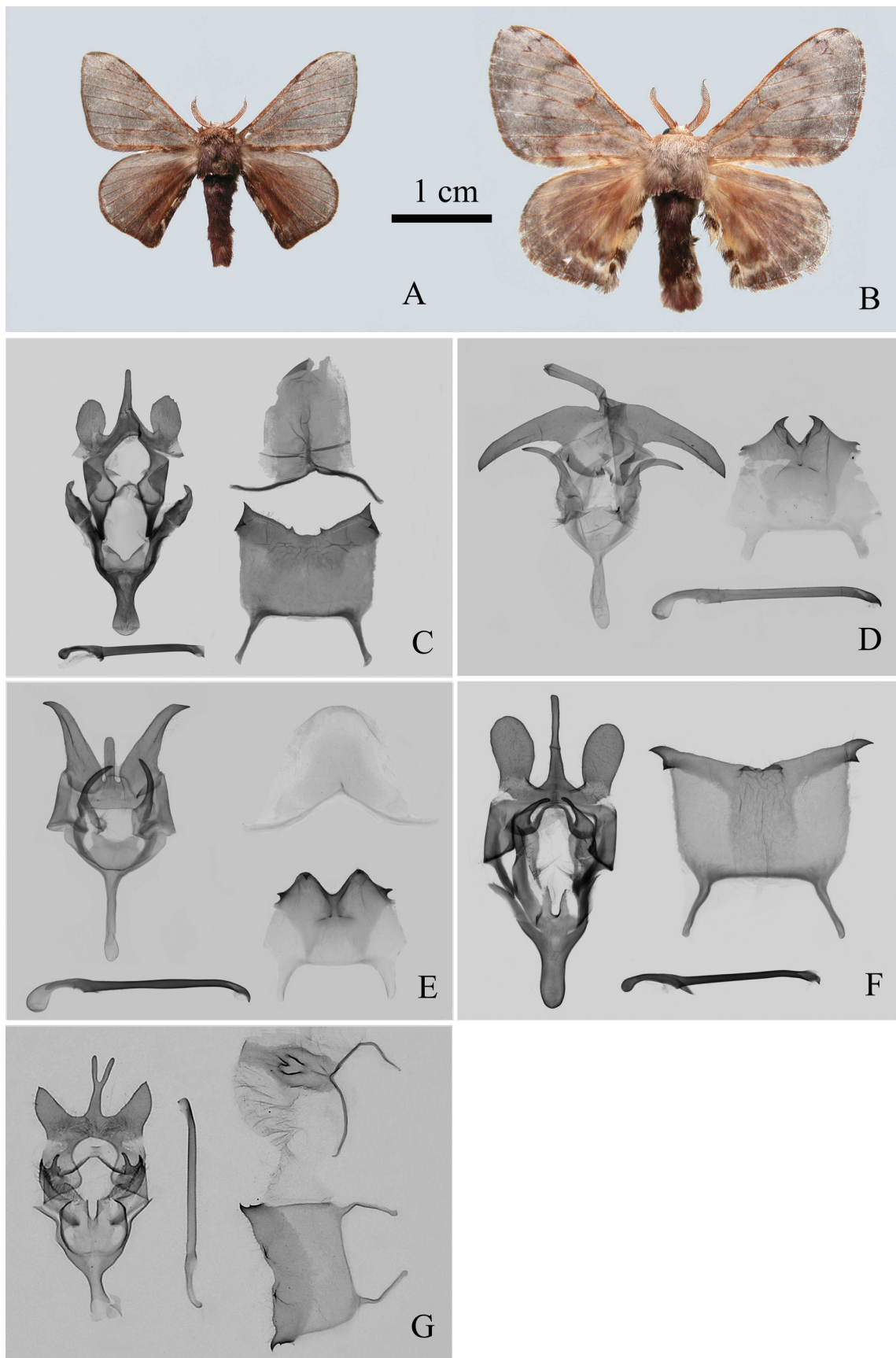


FIGURE 10. Adult males and male genitalia of *Triuncina* spp. A. *T. xiongi* sp. nov., male (Hainan), holotype; B. *T. daii* sp. nov., male (Guangdong), holotype; C. *T. brunnea*, male genitalia (Taiwan); D. *T. xiongi* sp. nov., male genitalia (Hainan), holotype; E. *T. daii* sp. nov., male genitalia (Guangdong), holotype; F. *T. diaphragma*, male genitalia (Guangxi); G. *T. nitida*, male genitalia (Myanmar).

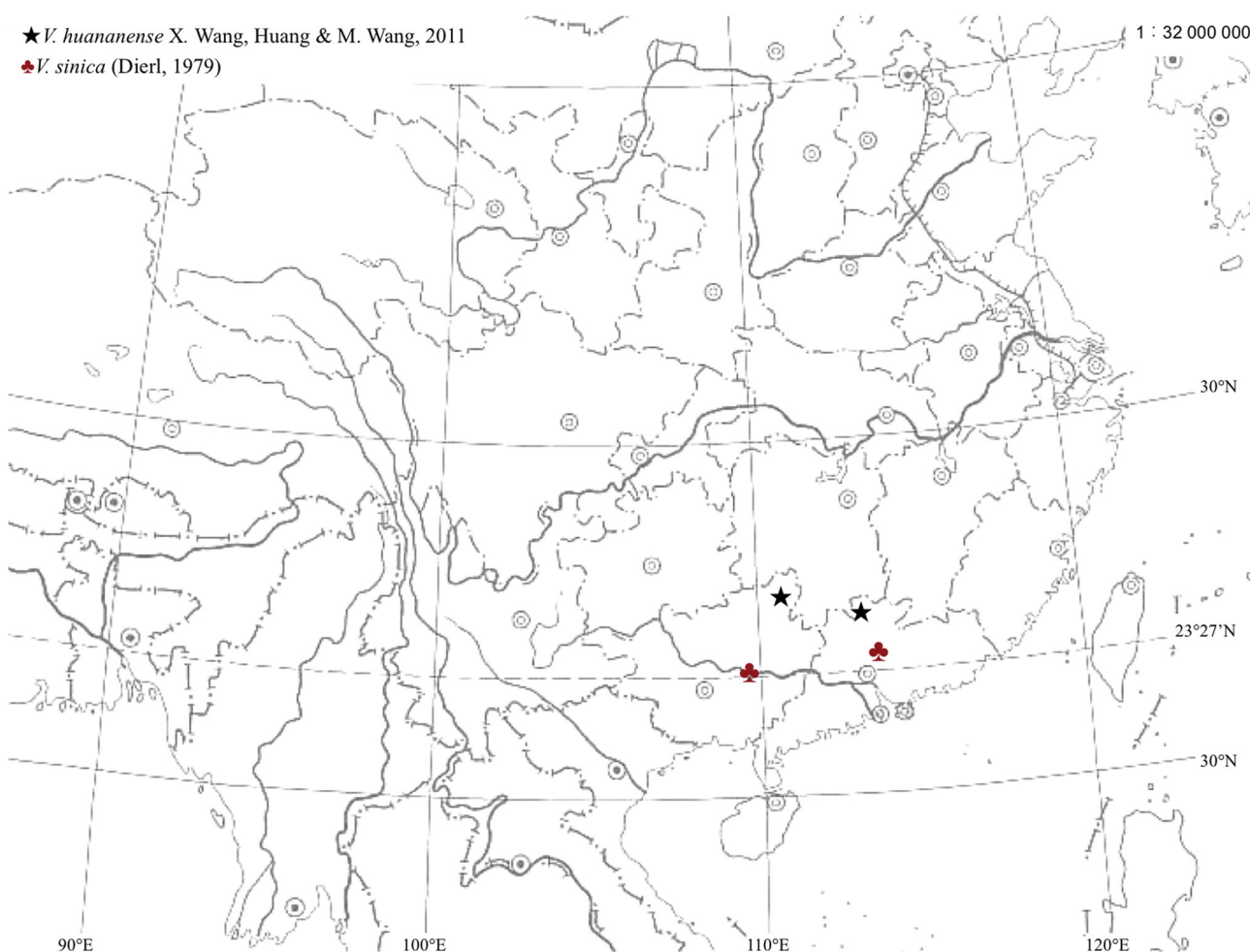
VI. *Valvaribifidum* Wang, X., Huang & Wang, M., 2011 (FIGURE 11)

Valvaribifidum Wang, X., Huang & Wang, M., 2011, *Florida Entomologist* 94(3): 567. Type species: *Valvaribifidum huananense* Wang, X., Huang & Wang, M., 2011, by original designation.

Diagnosis. This genus was diagnosed by a dark gray or dark brown forewing with an arcuate outer margin, the costal and inner margins edged with yellow and black patterns; the brownish-gray or yellowish-brown hindwing, the inner margin edged with yellow and black patterning; and in the male genitalia, a thin and apically pointed uncus, a valva that is broader basally and sickle-shaped distally, bending inwards to the base of uncus, and a stout stout and basally constricted saccus.

Distribution. South China.

Remarks. This genus is endemic to South China. Based on a phylogenetic analysis of mitochondrial and nuclear DNA sequences (*COI* + *18S* + *28S*), it is close to *Triuncina* with a clade comprising *V. huananense* and *T. brunnea* having bootstrap support of 95% on a neighbor-joining tree and a Bayesian posterior probability of 1.00 on a Bayesian tree (Wang *et al.*, 2010). In this paper, both *Valvaribifidum* species are recorded from China (Map 6).



Map 6. Distribution of *Valvaribifidum* spp. in China.

Key to the species of *Valvaribifidum* in China

1. Forewing brownish gray with a medial pale blue translucent reniform patch *V. huananense*
- Forewing yellowish-brown without a medial pale blue translucent reniform patch. *V. sinica*

17. *Valvaribifidum huananense* Wang, Huang & Wang, 2011 (FIGURES 11A–11B)

Valvaribifidum huananense Wang, Huang & Wang, 2011, *Florida Entomologist* 94(3): 568. TL: Guangdong, China. Holotype: male (SCAU) [examined].

Diagnosis. Similar to *V. sinica* (Dierl, 1979) but distinguished by the following characters: forewing with a central light blue reniform translucent patch; uncus long sickle-shaped; tegumen narrow; and aedeagus curved ventrally.

Specimens examined. [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, Holotype deposited in SCAU, 22.X.2007, Lui-Sheng Chen leg.; 1 male, Paratype deposited in HUNAU, same data as holotype; [GUANGXI] Xing'an County (Mao'ershan National NR): 2 males, Paratype deposited in HUNAU, 8.VIII.2005, Min Wang & Lui-Sheng Chen leg..

Bionomics. In June 2008, Dr. Liu-Sheng Chen found larvae feeding on the leaf of an unidentified vine in Nanling National NR (Plate 4F–4H). The adults fly in summer and autumn (Plate 4E). The larvae are black, with a white dorsal stripe and yellow lateral stripes, and many long setae (Plate 4F–4G). The pupa is enclosed in pale yellow cocoon (Plate 4H).

Distribution. Mainland China (Guangdong, Guangxi).

Remarks. This species is endemic to South China.

18. *Valvaribifidum sinica* (Dierl, 1979) (FIGURES 11C–11D)

Trilocha sinica Dierl, 1979, *Spixiana* 2 (3): 255. TL: [Guangxi] “China, Kwanhsien”. Holotype: male (BMNH) [examined].

Diagnosis. This species can be distinguished from *V. huananense* by the following characters: forewing dark yellow without a pale blue kidney-shaped translucent spot medially, antemedial and medial lines arched, postmedial line oblique and submarginal line punctuate, costa with black spots.

Specimens examined. [GUANGXI] 1 male, Holotype deposited in BMNH with the label “Kwanhsien, 9.VII.1925, *Trilocha sinica* Dierl, det. W. Dierl, 1979, Holotypus, China: Kwanhsien, 9.VII.1925”; Paratype, 1 male deposited in BMNH, same data as the holotype except 24.VII.1924; [GUANGDONG] 1 female with the label “China, Guangdong, Mahn-tsi-shan (M), leg. R. Mell” (MWM); 3 females, the same data (ZMHU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Guangxi, Guangdong).

Remarks. The only known specimens are the types in the BMNH and several reared females in MWM and ZMHU. Wang *et al.* (2011) transferred the species to genus *Valvaribifidum* based on the following characters: uncus slender and finger-shaped, valve sickle-shaped with bending inwards to base of uncus, sacculus inflated, and saccus slender with swollen part distally.

VII. *Ocinara* Walker, 1856 (FIGURE 12)

Ocinara Walker, 1856, *List Specimens lepid. Insects Colln. Br. Mus.* 7: 1768. Type species: *Ocinara dilectula* Walker, 1856, by monotypy.

Diagnosis. The genus is diagnosed by the presence of a furculum in the male, which is a modification of the 8th tergite into a rectangular structure with lateral adpressed spines arising from an anterior 'frame'. In female genitalia, there is a large and scobinate signum in bursa, a large rounded lamella antevaginalis and a smaller lamella postvaginalis distinct from the 8th tergite, and distinctive lateral lobes on the membrane between these structures and the ovipositor lobes.

Distribution. Oriental and Palearctic Regions.

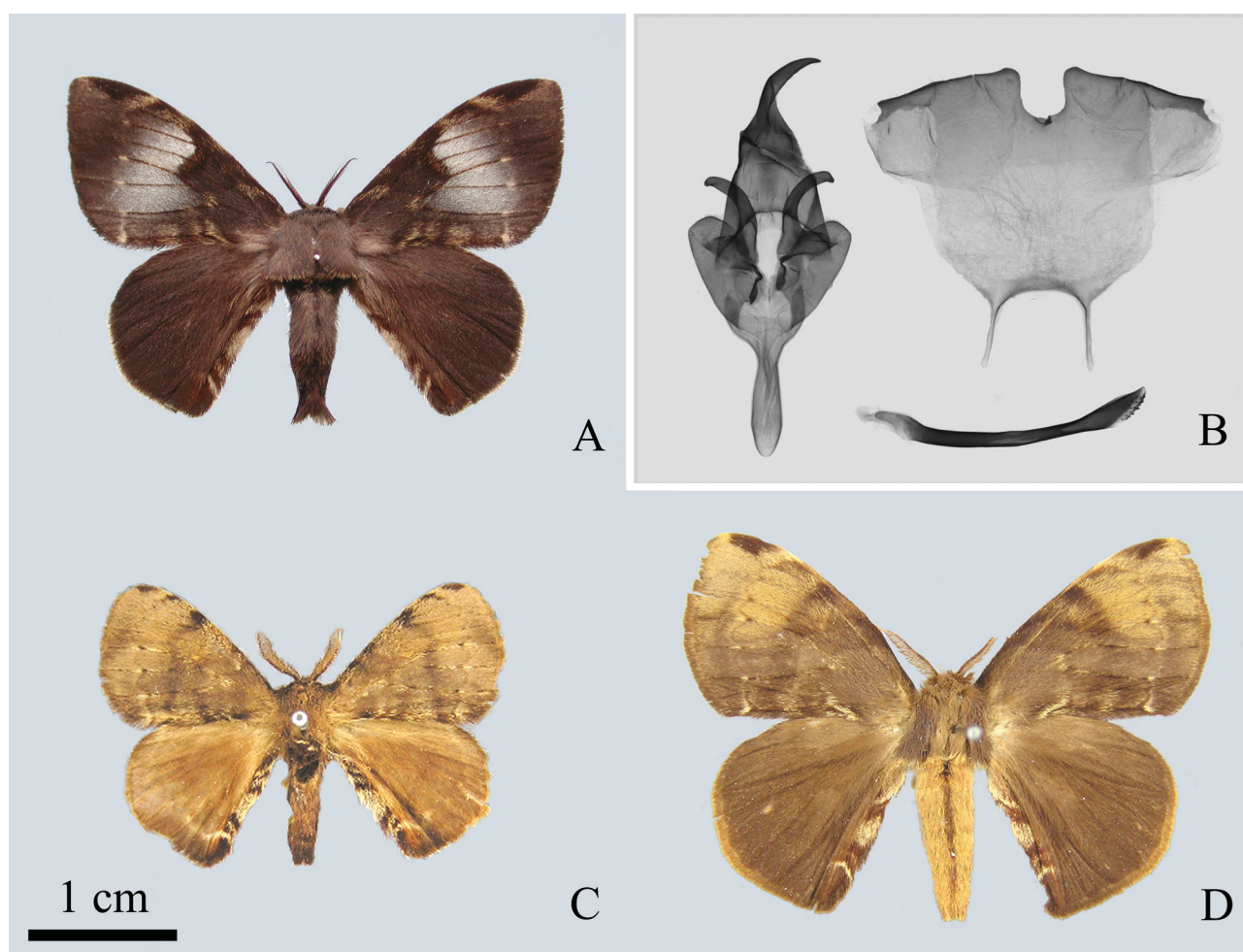


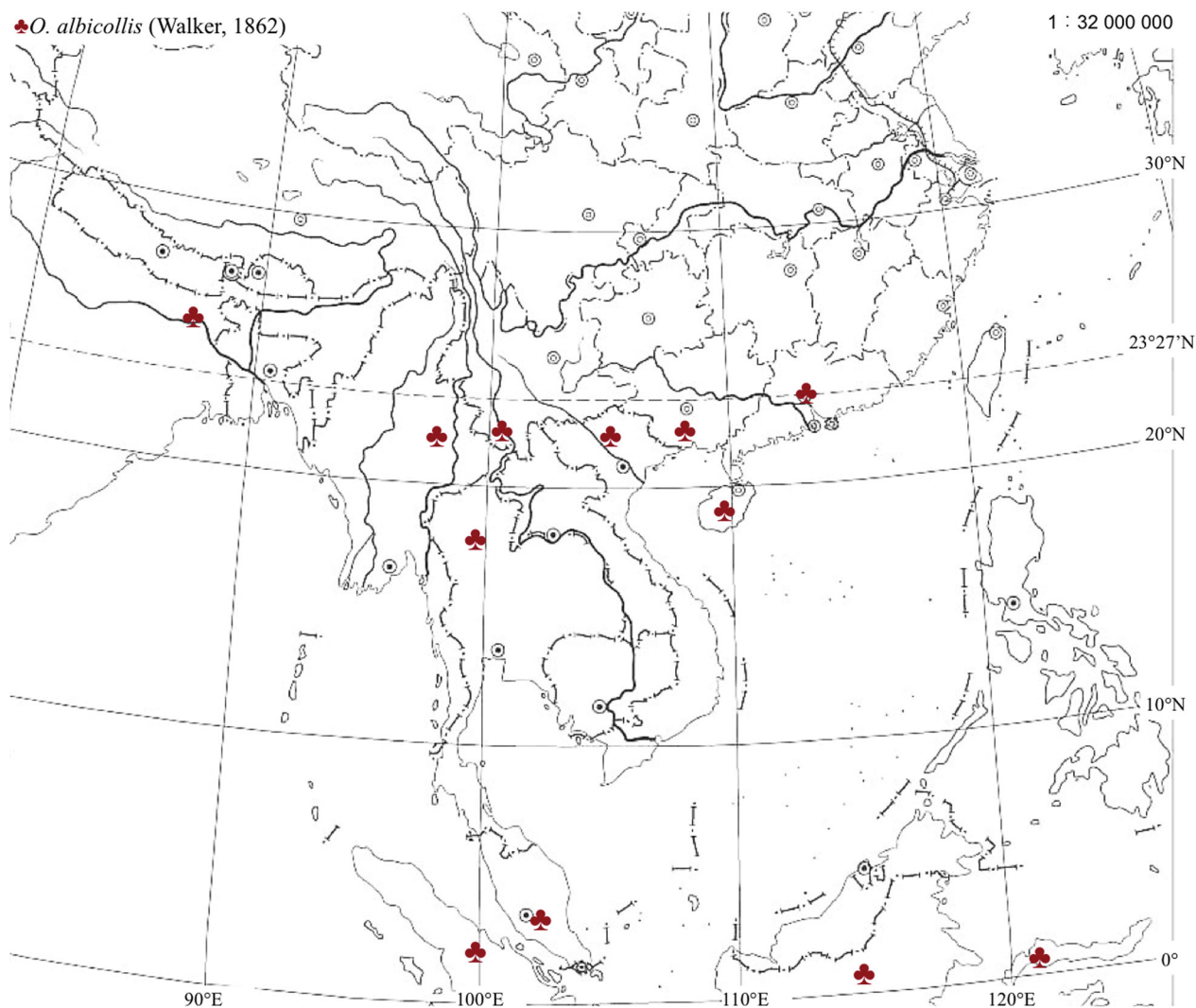
FIGURE 11. Adults and male genitalia of *Valvaribifidum* spp. A. *V. huananense*, male (Guangdong), holotype; B. *V. huananense*, male genitalia (Guangdong), holotype; C. *V. sinica*, male (Guangxi), holotype; D. *V. sinica*, female (Guangdong).

Remarks. The larvae of the *Ocinara* group were described by Mell (1958). They mostly resembled those of *Gunda* in having swellings on segments A2 and A5 and an extensile horn on A8. The horn could be flexed and extruded to terminate in a white apiculus. In contrast to the eggs of *Trilocha varians*, which are flattened, slightly rectangular discs, those of *Ocinara* are laid in long rows, with the shorter edges flattened and touching. The rows may curve but are not angled, and can be laid side-by-side but are separate. Pupation takes place in a yellow, semi-ovoid silken cocoon, which is usually attached to the surface of a leaf. The larval host plants of the group consist of *Ficus*, *Artocarpus* and *Streblus* (Moraceae) (Dierl, 1978; Mell, 1958; Roepke, 1924). The larva of the type species has been described as green with a horn on the 8th abdominal segment (Dierl, 1978), feeding on *Ficus* (Moraceae). The genus is most diverse in Sundaland, with only one species extending into the Indian Subregion, this being the only species recorded from China (Map 7).

19. *Ocinara albicollis* (Walker, 1862) (FIGURES 12A–12E)

Naprepa albicollis Walker, 1862, *J. Linn. Soc.* 6: 171. TL: [Borneo] “Sarawak”. Types (holotype by monotypy?): male (BMNH) [examined]. First recorded from China by Zolotuhin & Witt, 2009: 241.

Diagnosis. Characterized by the following characters: wing ochre-gray; forewing with apex slightly acute; discal cell with a lips-shaped spot; postmedial and submarginal lines dotted; uncus long, finger-shaped.



Map 7. Distribution of *Ocinaro albicollis* mainly in China.

Specimens examined. [GUANGDONG] Guangzhou City: 1 male and 3 females, Campus of South China Agricultural University, 1.XII.2005, Hai-Ying Ou fed. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, Hongqilingchang, 1.XI.2001, Min Wang & Guo-Hua Huang leg. (HUNAU); [HAINAN] Lingshui County (Diaoluoshan National NR): 1 male, 4–5.IV.2004, Min Wang & Guo-Hua Huang leg. (SCAU); Wuzhishan City (Wuzhishan National NR): 10 males, 18°53'N, 109°43'E, 20.II–10.IV.2001, local collector leg. (MWM); [YUNNAN] Xishuangbanna Dai Autonomous Prefecture: 1 male, Puwen, 30 km SSW Simao, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM).

Bionomics. *Ficus microcarpa* Linn., 1781 (Moraceae) is the recorded larval host plant. The larva is red, black and gray with a horn on segment A8 (Plate 5A).

Distribution. Mainland China (Guangdong, Guangxi, Yunnan) and Hainan, India, Sri Lanka, Thailand, Vietnam, Myanmar, Malaysia, Indonesia.

Remarks. The species has been encountered most frequently in lower and upper montane forests, but has been taken occasionally in the lowlands and settlements. In the past, it has always been misidentified in China as *Trilocha varians*.

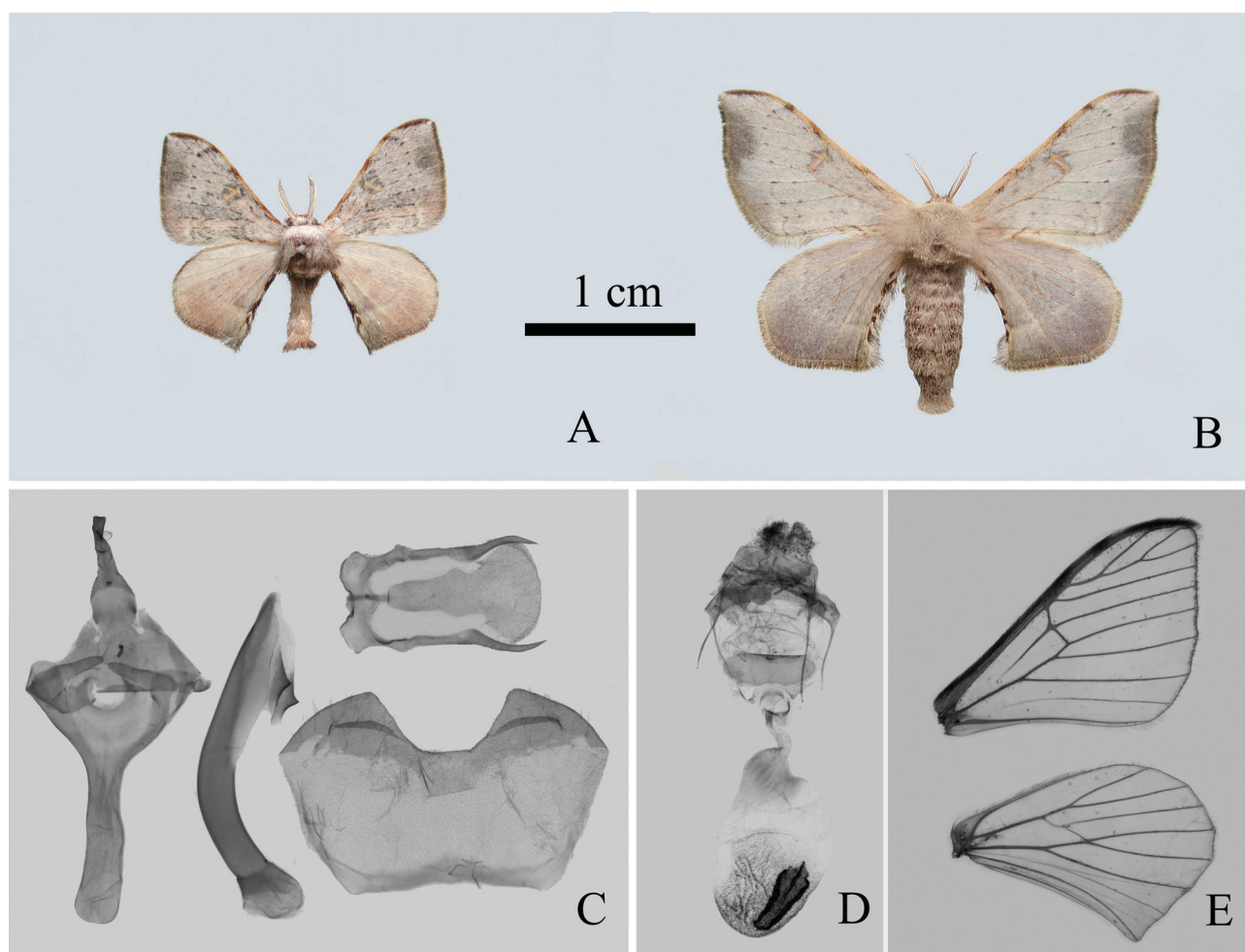


FIGURE 12. Adults, wing venation and genitalia of *Ocinarara albicollis* (Walker, 1862). A. Male (Guangdong); B. Female (Guangdong); C. Male genitalia (Guangdong); D. Female genitalia (Guangdong); E. Male wing venation (Guangdong).

VIII *Trilocha* Moore, [1860] (FIGURE 13)

Trilocha Moore, [1860], *Cat. lep. Ins. E. India Co.* 2: 382. Type species: *Naprepa varians* Walker, 1855, by monotypy.

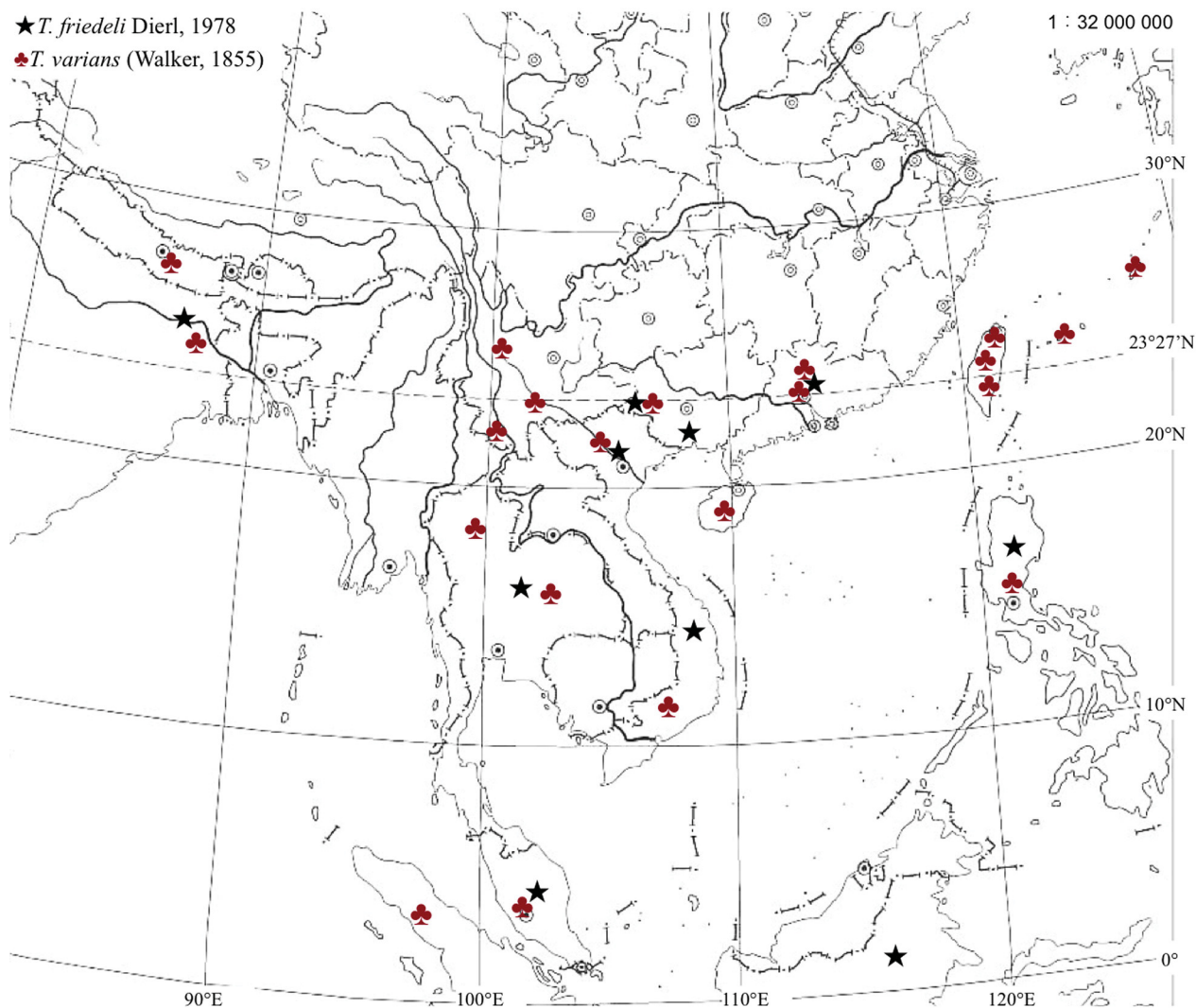
Naprepa Walker, 1855, *List Specimens lepid. Insects Colln Br. Mus.* 5: 1152. Type species: *Naprepa varians* Walker, 1855, by monotypy. Fletcher & Nye (1982) noted that this genus name is a junior homonym of *Naprepa* Walker, 1855, *Ibidem* 5: 1046 (Lepid., Notodontidae). The objective replacement name is *Trilocha* Moore, [1860].

Chazena Walker, 1869, *Charact. undescr. Lepid. Heterocera*: 21. Type species: *Chazena velata* Walker, 1869, by monotypy. Fletcher & Nye (1982) noted that *C. velata* is a junior subjective synonym of *Naprepa varians* Walker, 1855, *List Specimens lepid. Insects Colln Br. Mus.* 5: 1153.

Diagnosis. Characterized on the following features: wings red-ochre to ochre-gray; outer margins of fore- and hindwings with long fringes; uncus long, finger-shaped; gnathos reduced; saccus long and thick; aedeagus long and slender, curved near both ends; 8th sternite with posterior margin medially depressed and V-shaped; anterior margin with two long processes.

Distribution. Oriental and Palearctic Regions.

Remarks. The type species is widespread in the Oriental Region, extending to Taiwan, the Philippines, Sulawesi and Java. Its immature stages were described by Sevastopulo (1942). In this paper, two *Trilocha* species are recorded from China (Map 8).



Map 8. Distribution of *Trilocha* spp. mainly in China.

Key to the species of *Trilocha* in China

1. Forewing with a lips-shaped spot in discal cell; saccus not basally constricted; aedeagus strongly curved near apex *T. friedeli*
- Forewing with a kidney-shaped spot in discal cell; saccus basally constricted; aedeagus only slightly curved near apex. *T. varians*

20. *Trilocha friedeli* Dierl, 1978 (FIGURES 13A–13B)

Trilocha friedeli Dierl, 1978, *Spixiana* 3 (1): 243. TL: “S-Thailand, 20 km O. von Krabi”. Holotype: male (ZSM) [examined].
Trilocha friedeli Dierl, 1978: 248; Barlow, 1982: 45.

Diagnosis. This species is very similar to *T. varians*, but can be distinguished by the following characters: forewing with an obviously labiate spot in the discal cell; saccus not basally constricted; aedeagus strongly bent near the apex, posterior margin of the 8th sternite with two lateral processes. For worn specimens, genital dissection is strongly recommended to confirm identification.

Specimens examined. [GUANGDONG] Huizhou County (Nankunshan Provincial NR): 3 males, 24.VII.2005, Wei Li & Jing Li leg. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, Milv Village, 6.IV.2002, Guo-Hua Huang leg. (HUNAU); Jingxi County: 2 males, Renzhuang Village, 10–15.VII.2006, Liu-Sheng Chen & Xiong Wei leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Guangdong, Guangxi), Indonesia, Peninsular Malaysia, Vietnam, Thailand, India.

Remarks. Holloway (1987) considered that the species is rare in Southeast Asia. We here record the species from China for the first time.

21. *Trilocha varians* (Walker, 1855) (FIGURES 13C–13G)

Naprepa varians Walker, 1855, *Cat. Lep. Het. Br. M.* 5: 1153. TL: [Ceylon] “Ceylon and Hong Kong”. Syntype: male (BMNH) [examined].

Chazena velata Walker, 1869, *Char. Undescr. Het.*: 21. TL: “Limas”.

Trilocha varians: Kirby, 1892, *A synonymic catalogue of Lepidoptera Heterocera* 1: 718.

Ocinara velata: Hampson, [1893], *Fauna Brit. India*, Moths 1: 35.

Ocinara varians: Hampson, [1893], *Fauna Brit. India*: 35; Strand, 1922, in Seitz, *Die Gross-Schmetterlinge der Erde*: 437; Roepke, 1924, *Tijdschr. Ent.*, 67: 170; Grünberg, 1911, in Seitz, *Die Gross-Schmetterlinge der Erde* 2: 170; Chu & Wang, 1996, *Fauna Sinica Insecta*, 5: 38.

Diagnosis. This species is very similar to *T. friedeli*, but can be distinguished by the following characters: forewing with a kidney-shaped spot in the discal cell; saccus basally constricted; aedeagus slightly bent near the apex; long processes on anterior margin of 8th sternite closer together

Specimens examined. [TAIWAN] Taitung County: 1 male, 3 km west of Hungyeh village, 350 m, 5.XI.1996, 22°28'N, 120°52'E, T.Csvari & C.Szaboky leg. (MWM); 2 males, Chihpen Hot Springs, 400 m, 10–11.VI.1997, T.Herczig and L. Ronkay leg. (MWM); 1 male, 7 km E of Taimali, 710 m, 11–12.VI.1997, 22°41'N, 120°56'E, T.Szaboky & I.Soos leg. (MWM); 1 male, 5 km W Chipen, 350 m, 15–16.V.1997, M.Laszlo & G.Laszlo leg. (MWM); Hualien County: 1 male, 3 km W Hua-Juan, 150 m, 2.VII.1996, T.Csorba & L.Nemeth leg. (MWM); Pingtung County: 1 male, Hengchun, 27.V.2000, Daniel Anstine leg. (TFRI); Yunlin County: 1 male, Douliu, 25.I.1992, Yi-Bin Fan leg. (TFRI); Taipei City (Taipei Botanic Garden): 1 male, 20.XI.1983, Yu-Chen Chang leg. (TFRI); 1 male, 20.II.1991, Yi-Bin Fan leg. (TFRI); 2 males, 28.XI.1963, Yu-Chen Chang leg. (TFRI); 1 male, 22.X.1964, Yu-Chen Chang leg. (TFRI); Hsinchu City: 4 males, 24.XII.1984, Yu-Chen Chang leg. (TFRI); [GUANGDONG] Guangzhou City: 1 male, campus of South China Agricultural University, 9.V.2003, Guo-Hua Huang leg. (SCAU); 1 male, Baiyunshan Garden, 21.V.2004, larva collected and reared by Guo-Hua Huang, adult eclosed on June 14 (SCAU); 1 male, campus of South China Agricultural University, 1.XII.2005, Hai-Ying Ou fed. (SCAU); 5 males, campus of South China Agricultural University, 3.V.2006, Jing Gong fed. (SCAU); Foshan City: 1 female, Foshan Garden, 23.VI.2003, Liu-Sheng Chen leg. (SCAU); Qujiang County: 1 male and 1 female, Qujiang Service Area, 23.VI.2003, Guo-Hua Huang leg. (SCAU); [GUANGXI] Jingxi County: 1 male, Renzhuang Village, 31.VII.2007, Liu-Sheng Chen leg. (SCAU); [HAINAN] Wuzhishan City: 1 male, Mt. Atuoling, 23.X.2006, Min Wang, Zhen Li & Guo-Hua Huang leg. (HUNAU); 5 males, Wuzhishan Mts., 18°53'N, 109°43'E, 20.II–10.IV.2001, local collector leg. (MWM); Baisha County (Yinggeling National NR): 2 males, Daoyin Village, 4.XII.2005, Min Wang & Wei Xiong leg. (SCAU); Wenchang County (Bawangling National NR): 1 male, 25.V.2006, Liu-Sheng Chen leg. (HUNAU); [YUNNAN] Mojiang County: 1 male, Tongguan Town, 29.XII.2006, Min Wang leg. (SCAU); Xishuangbanna Dai Autonomous Prefecture: 1 male, Puwen, 30 km SSW Simao, 900 m, 16.III–10.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Dali Bai Autonomous Prefecture: 1 male, 10 km west Yunxian/ Daxing, 120 km west of Dali city, Lincang district, 1200 m, 16.III–10.IV.2000, 24°30'N, 100°01'E, Brechlin's local collector leg. (MWM).

Bionomics. The larvae feed on *Ficus carica* Linn., 1753, *Ficus microcarpa* Linn., 1781, *Streblus* spp. and *Artocarpus heterophyllus* Lam., 1789 (all Moraceae). Adults are on the wing throughout the year in Taiwan (Plate 5B–5E) and Guangdong (Plate 5F). Lin (2005) recorded that young larvae are gray with large subdorsal black spots on A2, and a short fleshy curved horn on A8. Mature larvae were dull brown, mottled paler dorsally and dark brown laterally, and with a purplish-brown double dorsal hump on A2 and a similar but smaller one on A5 (Plate 5G). The cocoon is boat-shaped, closely woven with white or yellow, rather-papery silk (Plate 5H). The pupa is pale yellow and thinly chitinized (Holloway, 1987). The pupa of *T. varians* is often parasitized by tachinid flies (Plate 6A–6D).

Distribution. Mainland China (Guangdong, Guangxi, Yunnan), Taiwan and Hainan Islands, southern Japan, Philippines, Malaysia, Indonesia, Vietnam, Thailand, Nepal, India including the Andaman islands, Sri Lanka.

Remarks. Holloway (1987) reported that this species was widely distributed in the Oriental Region. It is an important pest of ornamental plants (Huang *et al.*, 2002; Rajavel & Shanthi, 2007), and so its biological characters and control have been the subject of several recent works (Ou *et al.*, 2006; Hussain *et al.*, 2009).

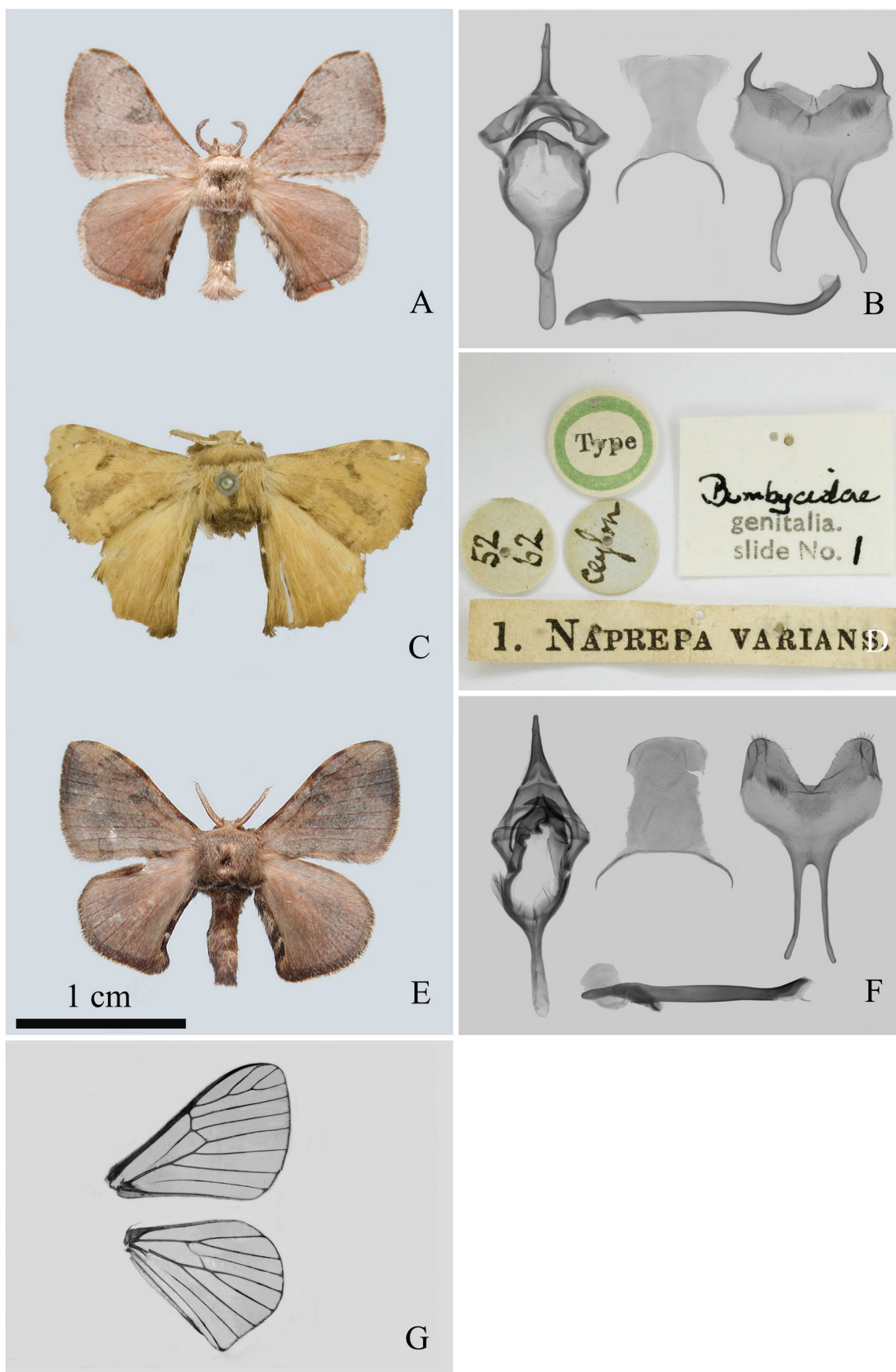


FIGURE 13. Adults, labels and male genitalia of *Trilocha* spp. A. *T. frieldeli*, male (Guangdong); B. *T. frieldeli*, male genitalia (Guangdong); C–D. *T. varians*, male, [holo]type; E. *T. varians*, male (Guangdong); F. *T. varians*, male genitalia (Guangdong); G. *T. varians*, wing venation (Guangdong).

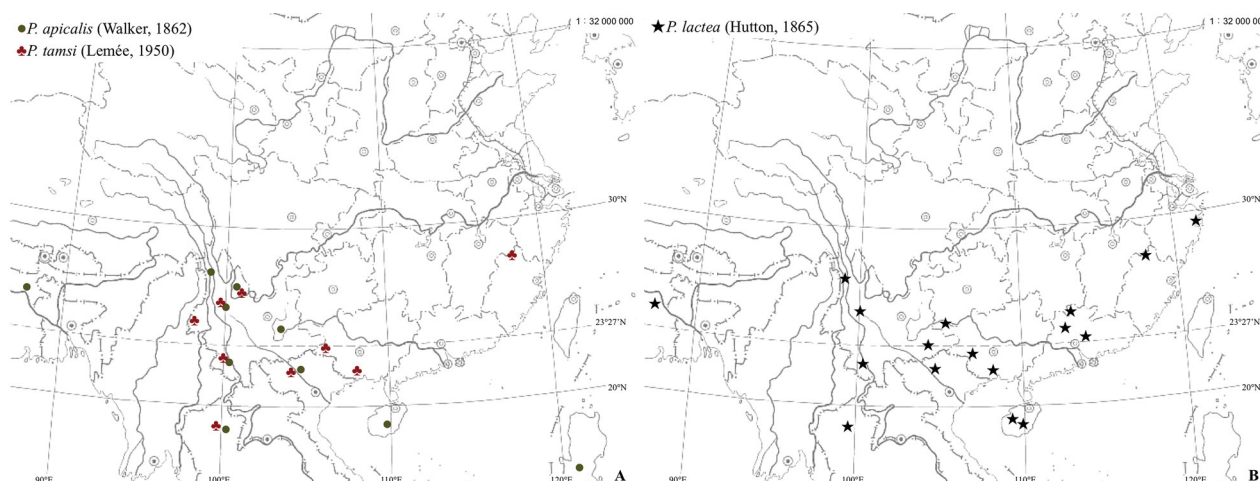
IX. *Penicillifera* Dierl, 1978 (FIGURES 14–15)

Penicillifera Dierl, 1978, *Spixiana* 1 (3): 249. Type species: *Dasychira apicalis* Walker, 1862, by monotypy.

Diagnosis. Characterized based on the following features: wings gray-white or ochre with numerous small black spots; apex of forewing blunt; inner margin of hindwing straight with 3–4 black spots; uncus bifid and broadly finger-shaped; gnathos reduced; saccus well-developed; aedeagus slender; posterior margin of 8th sternite with a number of short lateral and medial processes; 8th tergite “Y” shaped and covered with long hairs.

Distribution. Oriental Region including the Sino-Himalayan area.

Remarks. Roepke (1924) described the larvae of the type species, which are similar in appearance to those of *Ocinara*. The younger instars are yellowish gray-brown, whereas the fifth instar is milky-white and gray. Three *Penicillifera* species are here recorded from China (Map 9).



Map 9. Distribution of *Penicillifera* spp. mainly in China.

Key to the species of *Penicillifera* in China

1. Uncus bifid to base; saccus very broad and swollen apically; ground colour always white. *P. apicalis*
- Uncus bifid only to middle; saccus narrow and not swollen apically; some specimens with purple-gray ground colour. 2
2. Uncus flanked by two flattened processes; aedeagus slightly curved near base; purple-gray forms occur with whitish and grayish forms. *P. lactea*
- Uncus without lateral flattened processes; aedeagus straight; ground colour only dark to pale purple-gray. *P. tamsi*

22. *Penicillifera apicalis* (Walker, 1862) (FIGURES 14A–14C, 15A–15C)

Dasychira apicalis Walker, 1862, *J. Linn. Soc. Lond. (Zool.)* 6: 130. TL: “Sarawak”. Holotype: female (BMNH) [examined].

Dasychira signifera Walker, 1862, *J. Linn. Soc. Lond. (Zool.)* 6: 130. TL: “Sarawak”. Holotype: male (BMNH) [examined].

Synonymized by Dierl, 1978.

Dasychira apicalis: Kirby 1892, *A synonymic catalogue of Lepidoptera Heterocera* 1: 484.

Ocinara apicalis: Hampson [1893], *Fauna Brit. India*: 35.

Ocinara lactea: Grünberg 1911, *In Seitz, Macrolep. World*, 2: 191; Strand, 1922, *in Seitz, Die Gross-Schmetterlinge der Erde* 10: 437.

Diagnosis. Characterized by the following characters: forewing gray-white; apex of discal cell with four (males) or one (females) black dot; inner margin of hindwing with three black dots; uncus entirely bifid, the two parts outcurved apically; aedeagus curved near base.

Specimens examined. [HAINAN] Wuzhishan City (Wuzhishan National NR): 2 males, 18°53'N, 109°43'E, 1500 m, 20.II–10.IV.2001, local collector leg. (MWM); [YUNNAN] Fugong County: 1 male and 1 female, 42 km N Fugong, 1390 m, Lishadi (Walo), 27°15'N, 98°55'E, 15–27.X.1999, local collector leg. (MWM); Dali Bai Autonomous Prefecture: 2 males, 10 km west of Yunxian/ Daxing, 120 km west of Dali; Lincang distr., 1200 m,

16.III–10.IV.2000, 24°30'N, 100°01'E, Brechlin's local collector leg. (MWM); Xishuangbanna Dai Autonomous Prefecture: 2 males and 2 females, Puwen, 30 km SSW Simao, 900 m, 16.III–10.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Simao County: 3 males, 18 km S Simao, Mt. Mangxiba, 22°28'N, 101°01'E, 16.III–10.IV.2000, local collector leg. (MWM); Luxi County: 1 male, 2450 m, Laochuwenshan, June 2000, local collector leg. (MWM); Mouding county: 4 females, 1300 m, 16.III–10.IV.2000, 25°19'N, 101°32'E, local collector leg. (MWM).

Bionomics. *Morus alba* Linn., 1753, *Ficus cunia* Ham., *F. elastica* Roxb. ex Hornem., 1814 and *F. racemosa* Linn., 1753 (all Moraceae) are the larval host (Robinson *et al.*, 2010). The species is common from the lowlands to the upper montane zone.

Distribution. Mainland China (Yunnan) and Hainan Island, Philippines, Indonesia (Sumatra, Borneo), Malaysia (Sarawak), Vietnam, Thailand, India.

Remarks. This species is widely distributed in the Northeastern Himalaya, Sundaland and Philippines.

23. *Penicillifera lactea* (Hutton, 1865) (FIGURES 14D, 15D)

Ocinara lactea Hutton, 1865, *Trans. ent. Soc. Lond.* 2 (3): 328, pl. 19, fig. 6. TL: "at Mussooree at an elevation of about 5,400 feet". Type: male (BMNH) [examined].

Ocinara lactea: Kirby, 1892, *A synonymic catalogue of Lepidoptera Heterocera* 1: 717; Hampson [1893], *Fauna Brit. India*: 34; Strand, 1922, in Seitz, *Die Gross-Schmetterlinge der Erde* 10: 437; Grünberg, 1911, in Seitz, *Die Gross-Schmetterlinge der Erde* 2: 191.

Ocinara linafuncta Chu & Wang, 1993, **syn. nov.**, *Sinozoologia* 10: 228. TL: Fujian, China.

Diagnosis. This species is very similar to *P. apicalis*, but can be distinguished by the following characters: abdomen pale gray; costal margin of forewing edged with pale ochre; inner margin of hindwing with four black dots; uncus flanked laterally by two flattened processes; saccus not swollen apically.

Specimens examined. [ZHEJIANG] Linhai City: 1 male, Mt. Kuocangshan, Lingjiang river, 600–900 m, March to middle April 2000, S. Li leg. (MWM); [GUANGDONG] Yingde County (Shimentai National NR): 2 males, Huangdong Station, 30.X.2000, Min Wang leg. (SCAU); 2 males, Huangdong Station, 24.VI.2001, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 13.VI.2003, Guo-Hua Huang leg. (SCAU); 1 male, 18.IV.2003, Guo-Hua Huang leg. (SCAU); Huizhou County (Nankunshan Provincial NR): 1 male, 18.V.2003, Guo-Hua Huang leg. (SCAU); 1 male, 30.III.2004, Min Wang & Guo-Hua Huang leg. (SCAU); Ruyuan County (Nanling National NR): 2 males, 20.XI.2003, De-Yu Xin leg. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, Hongqilin Chang, 6.XI.2001, Min Wang & Guo-Hua Huang leg. (SCAU); 7 males and 2 females, 30 km southwest of Nanping town, 900 m, 21°43'N, 107°32'E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); Jingxi County: 1 female, Renzhuang Village, 10–15.VII.2006, Liu-Sheng Chen & Wei Xiong leg. (SCAU); Longlin County: 1 male, Mt. Jinzhongshan, 31.VII.2007, Liu-Sheng Chen leg. (SCAU); [HAINAN] Ledong County (Jianfengling National NR): 1 male, 12.IV.2009, Min Wang leg. (SCAU); 1 male, 29–30.XI.2003, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 23.V.2004, Min Wang & Guo-Hua Huang leg. (SCAU); Lingshui County (Diaoluoshan National NR): 1 female, 19.III.2003, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 24.V.2004, Min Wang & Guo-Hua Huang leg. (SCAU); 3 males, 26.V.2004, Min Wang & Guo-Hua Huang leg. (SCAU); Baisha County (Yinggeling National NR): 1 male, 18.V.2005, Min Wang leg. (HUNAU); 1 male, Muji Village, 22.XI.2005, Min Wang leg. (SCAU); Wuzhishan City (Wuzhishan National NR, 18°53'N, 109°43'E, 1500 m): 80 males, 20.II–10.IV.2001, local collector leg. (MWM); 4 males, March 2003, Siniaev & his team leg. (MWM); 4 males, 17.VII–07.VIII.2003, Siniaev & his team leg. (MWM); [YUNNAN] Dali Bai Autonomous Prefecture: 4 males, 10 km west of Yunxian Daxing, Lincang distr., 1200 m, 16.III–10.IV.2000, 24°30'N, 100°01'E, Brechlin's local collector leg. (MWM); 3 males, Yunlong, 13 km N Caojian, Fengshuining Mts., 2460 m, 10–23.VI.1999, R. Brechlin leg. (MWM); 1 male, Yunxian-Daxing, 1200 m, 16.III–10.IV.2000, 24°30'N, 100°01'E, local collector leg. (MWM); Xishuangbanna Dai Autonomous Prefecture: 1 male, 50 km N Jinghong, Guanping, 1000 m, 19–27.I.2003, 22°10'N, 101°E, S. Murzin leg. (MWM); Wenshan County: 1 male, env. Dulong, 60 km SE Wenshan, 10 km SE Maguan, 2400 m, 30.III.1999, G. Müller leg. (MWM); Fugong County (Nuijiang Lisu and Dulong auton. Pref., Fugong county, Lichadi (=Walo), 42 km N of Fugong, 1390 m, 27°15'N, 98°55'E): 1 male and 3 females, 14–24.X.1999, local collector leg. (MWM); 1 male, 12–16.V.1999, R. Brechlin leg. (MWM); Simao County: 1 male, 18 km S Simao, Mt. Mangxiba, 22°28'N, 101°01'E, 16.III–10.IV.2000, local collector leg. (MWM).

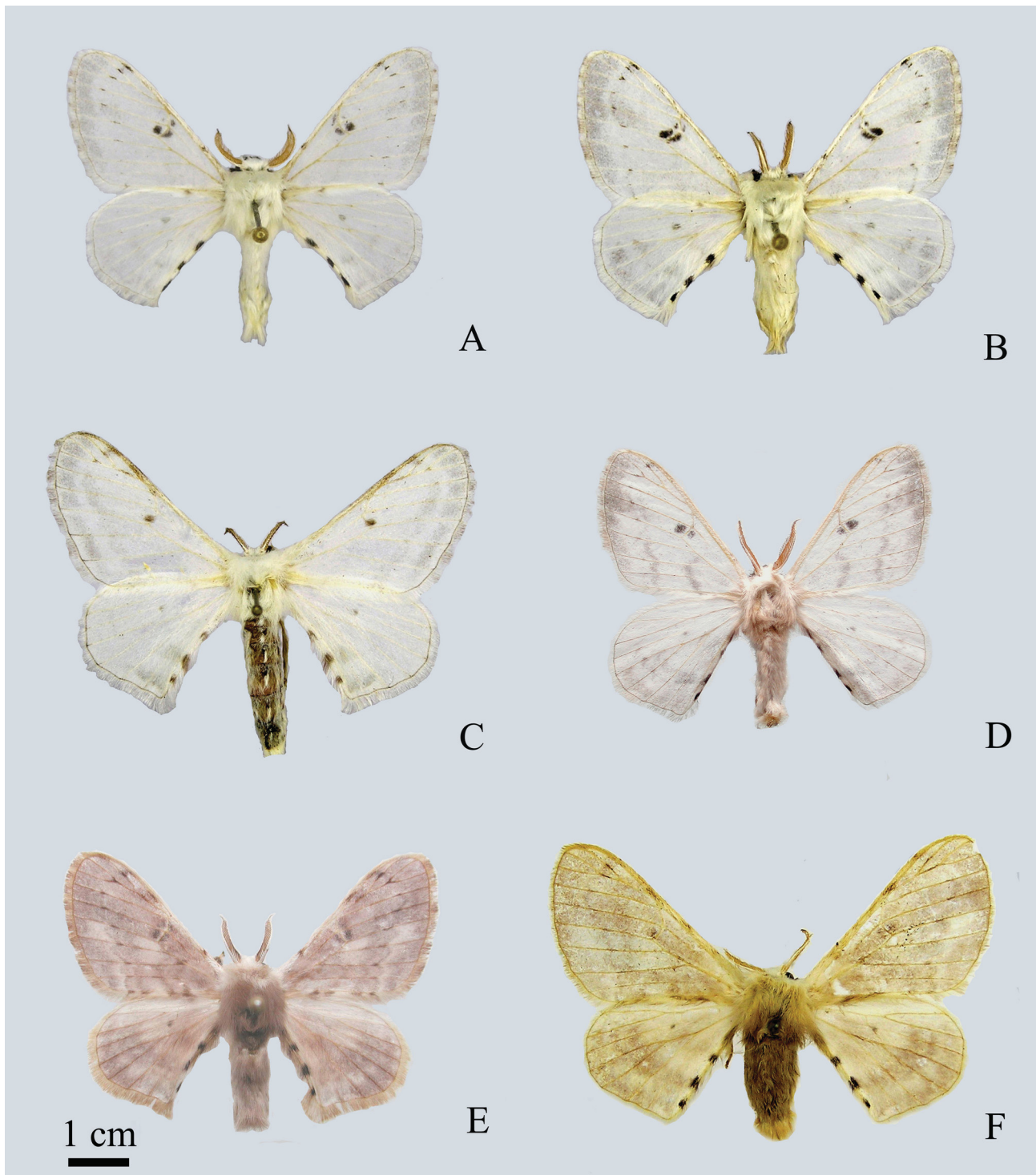


FIGURE 14. Adults of *Penicillifera* spp. A. *P. apicalis*, male (Thailand); B. *P. apicalis*, male (Thailand); C. *P. apicalis*, female (Yunnan); D. *P. lactea*, male (Guangdong); E. *P. tamsi*, male (Guangxi); F. *P. tamsi*, female (N. Vietnam).

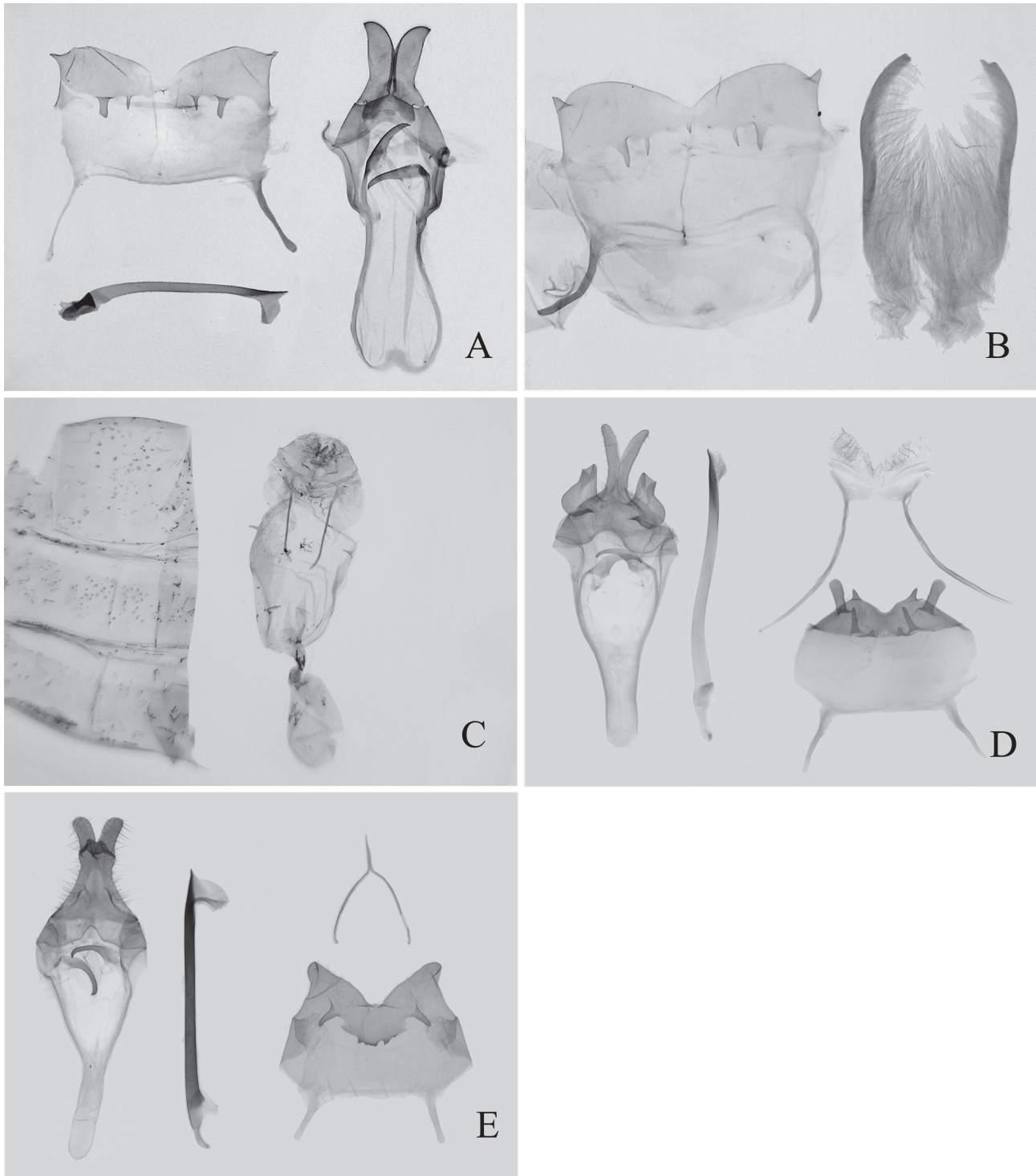


FIGURE 15. Genitalia of *Penicillifera* spp. A–B. *P. apicalis*, male (Thailand); C. *P. apicalis*, female (Yunnan); D. *P. lactea*, male (Guangdong); E. *P. tamsi*, male (Guangxi).

Bionomics. *Penicillifera lactea* was described from caterpillars feeding on *Ficus venosa* (Fic-v) “stretched along the extreme end of twigs” (Hutton, 1865).

Distribution. Mainland China (Zhejiang, Fujian, Guangdong, Guangxi, Yunnan) and Hainan, Islamic Republic of Afghanistan (=Afghanistan), Islamic Republic of Pakistan (=Pakistan), Republic of India (=India), Socialist Republic of Vietnam (=Vietnam), Kingdom of Thailand (=Thailand), Malaysia.

Remarks. This species is endemic to and widely distributed in the Himalaya Region.

24. *Penicillifera tamsi* (Lemée, 1950) (FIGURES 14E–14F, 15E)

Ocinara tamsi Lemée, 1950, *Contrib. l'étude Lépid. Haut-Tonkin et Saigon*: 37. TL: Backan. Neotype – Vietnam, Nghe An Prov., Ban Khom, 280 m. Neotype: male (MWM) [examined].

Ocinara tetrapuncta Chu & Wang, 1993, *Sinozoologia* 10: 230. TL: Yunnan, China. Synonymized by Zolotuhin & Witt, 2009.

Diagnosis. Similar to other *Penicillifera* species but can be distinguished by: wings ochre; hindwing inner margin with three black dots; uncus bifid to the middle, the lobes short and finger-shaped; saccus not swollen apically; aedeagus slender and very straight.

Specimens examined. [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, Hongqilin Chang, 6.XI.2001, Min Wang & Guo-Hua Huang leg. (SCAU); 1 female, Mt. Pinglongshan., 6.IV.2002, Min Wang leg. (SCAU); 1 male, Hongqilin Chang, 2.IV.2002, Min Wang & Guo-Hua leg. (SCAU); 1 male, Milv Village, 6.IV.2002, Guo-Hua Huang leg. (SCAU); 1 male, Dongzhonglin Chang, 8.IV.2002, Guo-Hua Huang leg. (SCAU); Napo County: 1 male, Defu Village, 4.XII.2005, Min Wang leg. (SCAU); [YUNNAN] Yingjiang County (Tongbiguan Provincial NR): 2 males, 21.VI.2005, Guo-Hua Huang, Liu-Sheng Chen & Jing-Xian Liu leg. (HUNAU); Xishuangbanna Dai Autonomous Prefecture: 39 males, Puwen, 30 km SSW Simao, 900 m, 16.III–10.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Dali Bai Autonomous Prefecture: 3 males, Yunlong, 13 km north of Caojian town, Fengshuining Mts., 2460 m, 10–23.VI.1999, R. Brechlin leg. (MWM); 3 males, 10 km W Yunxian Daxing, 120 km W Dali; Lincang distr., 1200 m, 16.III–10.IV.2000, 24°30'N, 100°01'E, Brechlin's local collector leg. (MWM); 11 male, Yunxian/ Daxing, 1200 m, 20 km S Dali, 16. III–10.IV.2000, 24°30'N, 100°01'E, local collector leg. (MWM); Simao County: 3 males, 18 km S Simao, Mt. Mangxiba, 22°28'N, 101°01'E, 16.III–10.IV.2000, local collector leg. (MWM); Lancang County: 1 male, 130 m southwest of Kunming, 1430 m, 25.XI–5.XII.1998, local collector leg. (MWM); Mouding County: 14 males, 1300 m, 16.III–10.IV.2000, 25°19'N, 101°32'E, local collector leg. (MWM).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Fujian, Guangxi, Yunnan), Vietnam, Thailand.

Remarks. Chu & Wang (1993) described this species as *Ocinara tetrapuncta* Chu & Wang, 1993.

X. *Bivincula* Dierl, 1978 (FIGURES 16, 17)

Bivincula Dierl, 1978, *Spixiana* 1 (3): 258. Type species: *Ocinara diaphana* Moore, 1879, by original designation.

Diagnosis. Characterized by the following features: gray white or pale ochre forewing with complex gray patterns; hindwing with medial and antemedial lines obscure, postmedial and submarginal lines consisting of gray spots, inner margin with black spots; outer margins of fore- and hindwings with short fringes; valva short with broad base and sickle- or thumb-shaped apex.

Distribution. South Himalaya area.

Remarks. Three species of this genus are currently recorded in China (Map 10).

Key to the species of *Bivincula* in China

- | | | |
|----|---|---------------------|
| 1. | Saccus broad and short | <i>B. watsoni</i> |
| - | Saccus slender and long | 2 |
| 2. | Valva sickle-shaped distally; saccus not swollen apically | <i>B. diaphana</i> |
| - | Valva thumb-shaped distally, saccus slightly swollen apically | <i>B. kalikotei</i> |

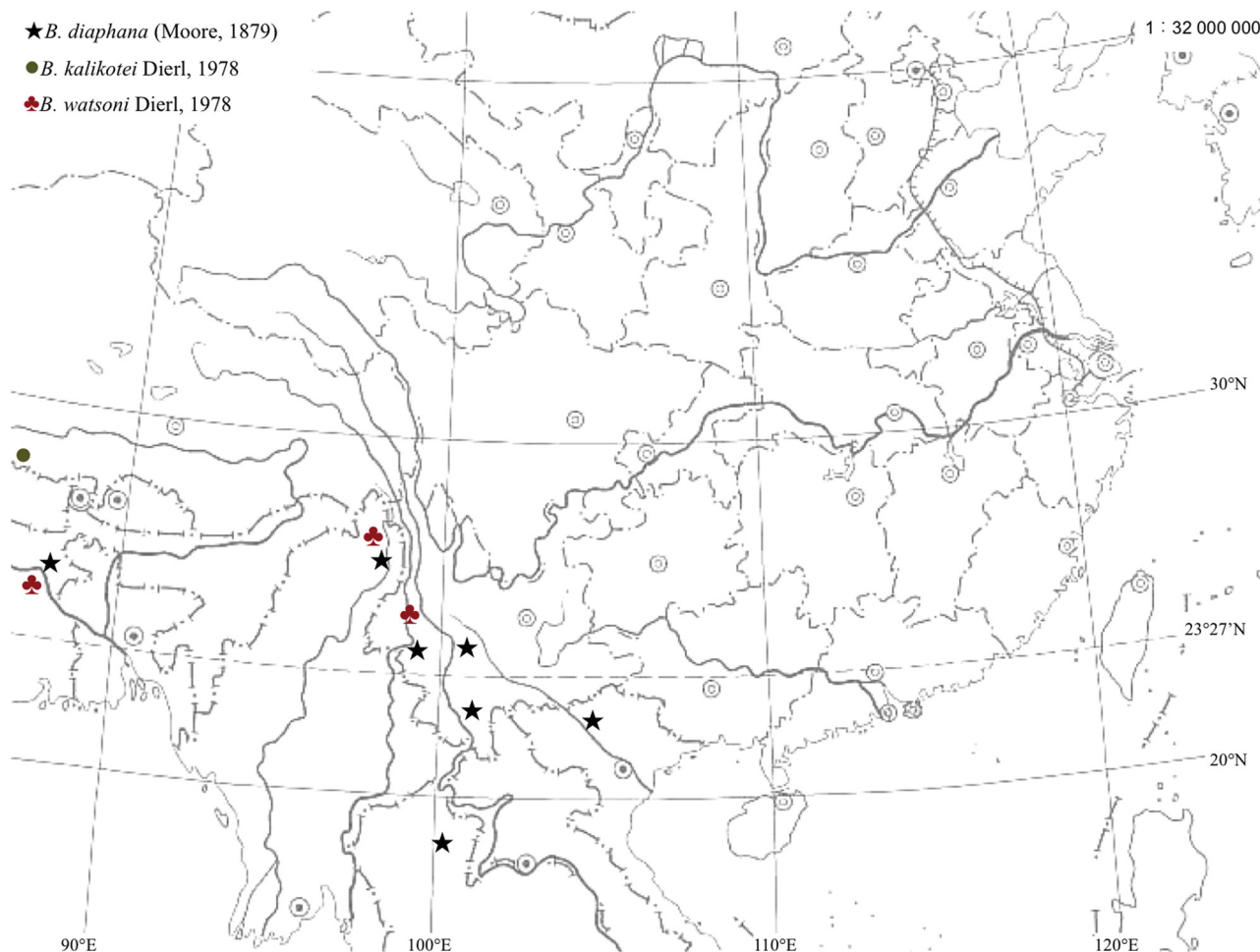
25. *Bivincula diaphana* (Moore, 1879) (FIGURES 16–16D, 17A)

Ocinara diaphana Moore, 1879, *Ind. Lep. Insects Colln. Atk.*: 83. TL: Khasia Hills. Holotype by monotypy: male (ZMHU) [examined].

Diagnosis. Characterized by costal margins of fore- and hindwings edged with yellow scales, uncus with pointed apex, valva sickle-shaped distally, saccus long and slender, and aedeagus slender and straight.

Specimens examined. [YUNNAN] Yingjiang County (Tongbiguan Provincial NR): 1 male, 21.VI.2005, Guo-Hua Huang, Liu-Sheng Chen & Jing-Xian Liu leg. (HUNAU); Xishuangbanna Dai Autonomous: 1 male, Puwen, 30 km southwest of Simao city, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Daxingsi (10 km west of Yunxian County in Lincang district): 5 males, 120 km south of Dali city, 1200 m, 16.III–10.IV.2000, 24°30'N, 100°01'E, Brechlin's local collector leg. (MWM); Mt. Manxieba: 3 males and 2 females, 18 km south of Simao city, 22°28'N, 101°01'E, 16.III–10.IV.2000, Dr. R. Brehlin & his local collector leg. (MWM).

Bionomics. Adults fly in winter and summer in southern China.



Map 10. Distribution of *Bivincula* spp. mainly in China.

Distribution. Mainland China (Yunnan), Vietnam, Thailand, Myanmar and India.

Remarks. The species differs from *B. watsoni* in the absence of the black markings on the forewing and abdominal margin.

26. *Bivincula kalikotei* Dierl, 1978 (FIGURES 16E, 17B, 17D)

Bivincula kalikotei Dierl, 1978, *Spixiana*, 1 (3): 262. TL: "Nepal, Kyumnu Khol-Tal bei Gandrung 2350 m". Holotype: male (ZSM) [examined].

Diagnosis. This species is very similar to *B. diaphana*, but can be distinguished by the following characters: discal cell of forewing with a black dot; uncus entire; valvae fused basally, deeply bifid to near the base with a long costal strip; harpe thumb-shaped; saccus shorter, slightly swollen apically; aedeagus apically curved.

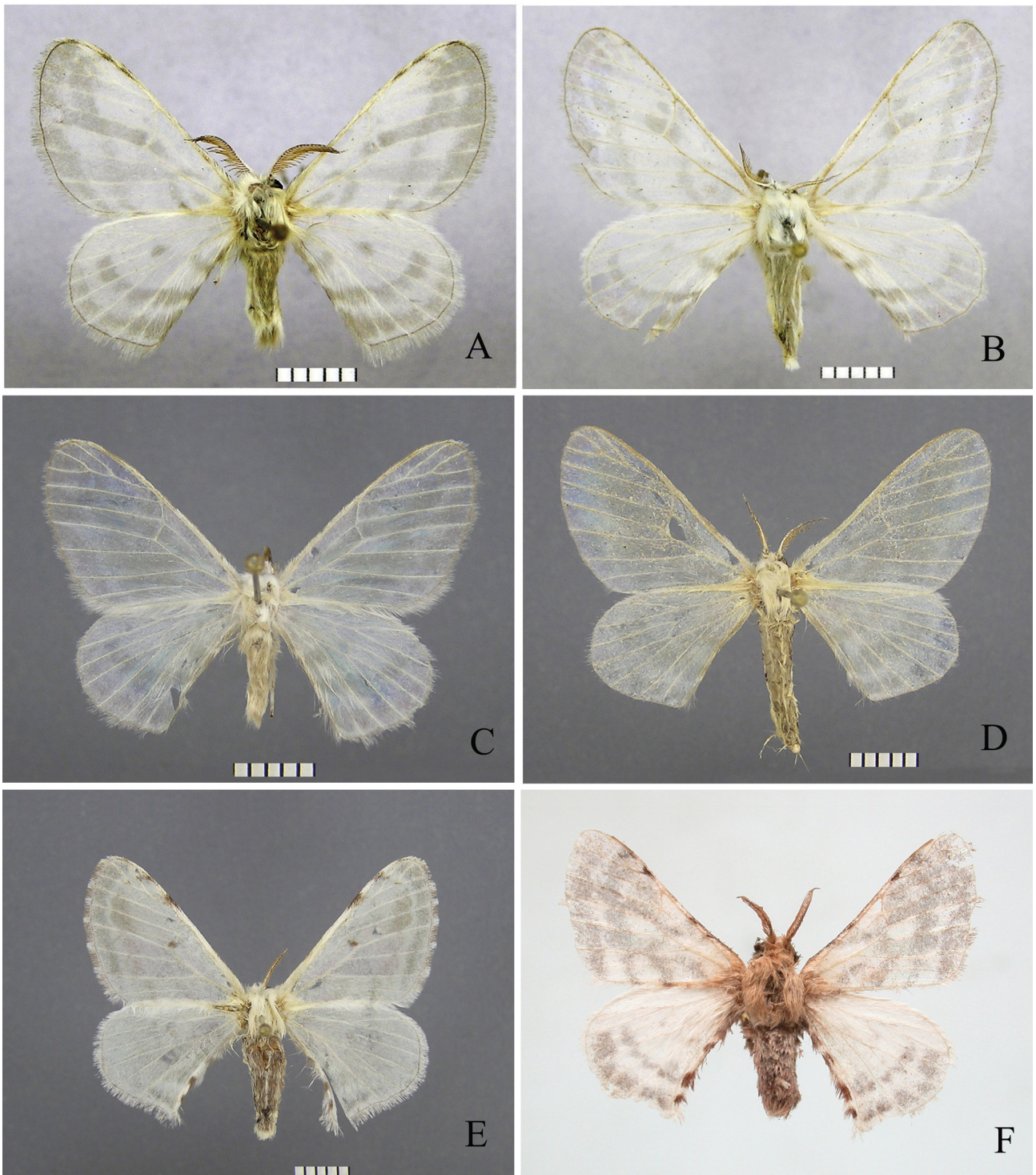


FIGURE 16. Adults of *Bivincula* spp. A. *B. diaphana*, male (Thailand); B. *B. diaphana*, female (Thailand); C. *B. diaphana*, male (Yunnan); D. *B. diaphana*, female (Yunnan); E. *B. kalikotei*, female (Yunnan); F. *B. watsoni*, male (Yunnan).

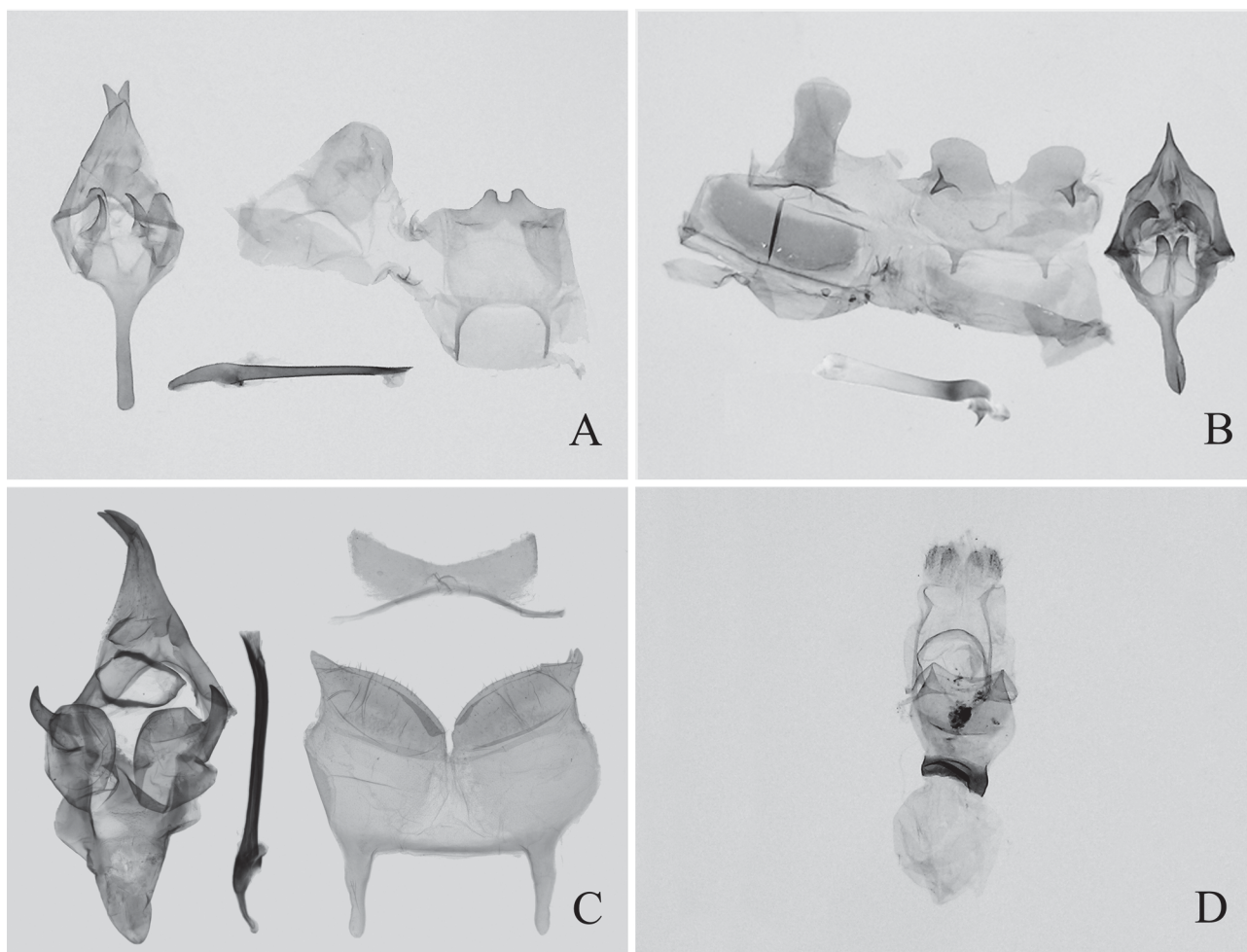


FIGURE 17. Genitalia of *Bivincula* spp. A. *B. diaphana*, male (N. Vietnam); B. *B. kalikotei*, male (E. Nepal); C. *B. watsoni*, male (Yunnan); D. *B. kalikotei*, female (Sikkim).

Specimens examined. [XIZANG (TIBET)] Nyalam: 1 female, 3000 m, 28°00'N, 86°00'E, 4–6.VII.1998, O. Ammosov leg. (MWM).

Bionomics. Adults are on the wing in summer in Tibet.

Distribution. Mainland China (Xizang (Tibet)), Nepal.

Remarks. The species is here recorded from China for the first time.

27. *Bivincula watsoni* Dierl, 1978 (FIGURES 16F, 17C)

Bivincula watsoni Dierl, 1978, *Spixiana*, 1 (3): 260, pl. V, fig. 37, text-fig. 23. TL: Sikkim.

Diagnosis. Characterized by the following features: costa with four black spots; inner margin of hindwing with four spots; postmedial and submarginal lines consisting of obvious gray spots; uncus bifid, the lobes sickle-shaped; saccus broader and short; valva sickle-shaped distally; aedeagus curved apically.

Specimens examined. [YUNNAN] Tengchong County: 2 males, Beihai Town, 29.VI.2002, Ming-Yi Tian leg. (SCAU); 1 male, Mt. Gaoligongshan, 15.VI.2005, Ming-Yi Tian leg. (SCAU).

Bionomics. Early stages and host plant unknown.

Distribution. Mainland China (Yunnan), India, Myanmar.

Remarks. Huang & Wang (2006) first recorded this species from China. It flies in summer in China, but not many specimens have been collected.

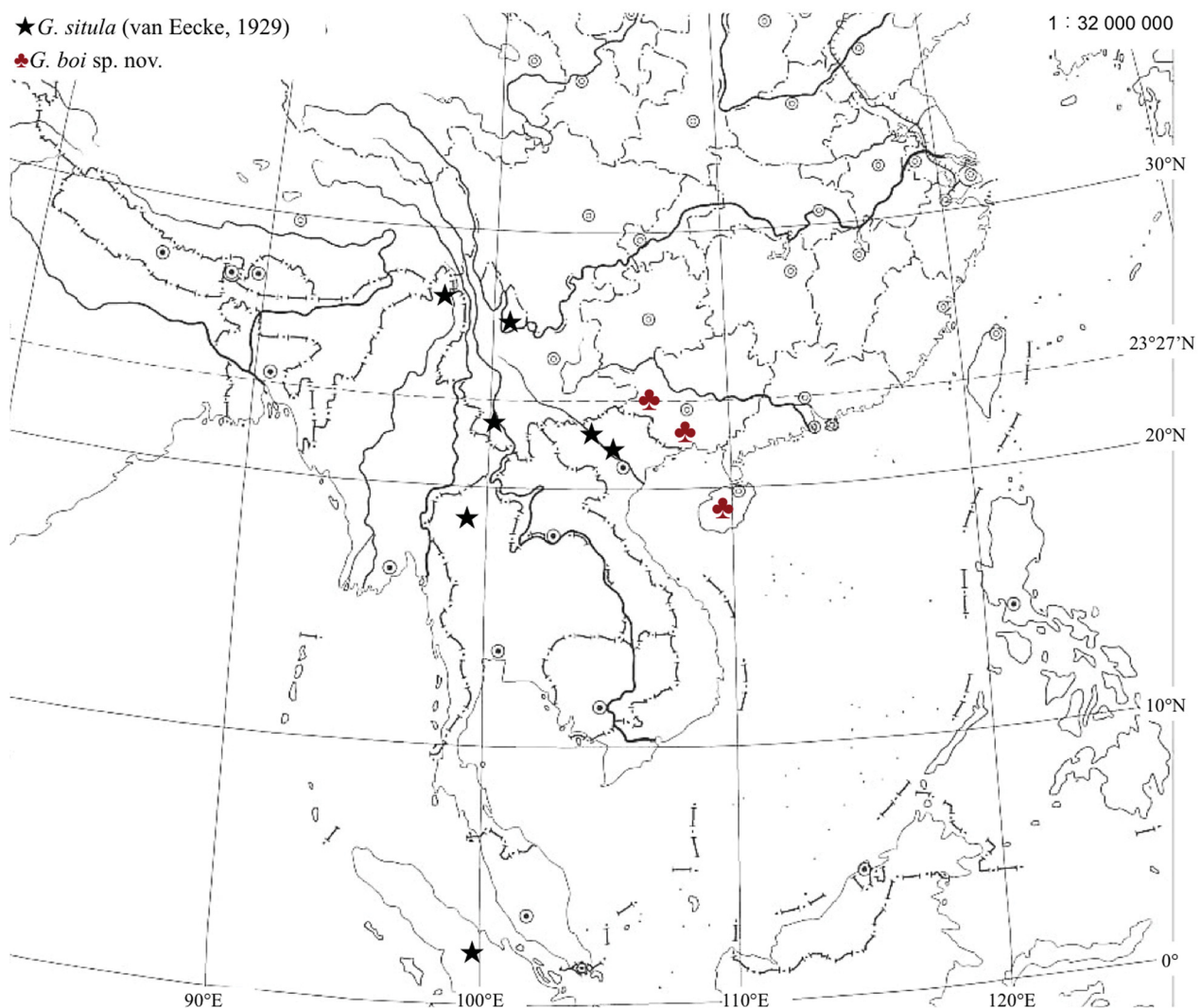
XI. *Gnathocinara* Dierl, 1978 (FIGURE 18)

Gnathocinara Dierl, 1978, *Spixiana* 1 (3): 266. Type species: *Ocinara situla* van Eecke, 1929, by original designation. First recorded from China by Zolotuhin & Witt, 2009: 249.

Diagnosis. Characterized by the following features: wings white or pale gray; 8th sternite with posterior margin deeply bifid, with two pairs differently-sized and shaped projections, anterior margin with two elongate, distally swollen processes; 8th tergite goblet-shaped, anterior margin with two acute bars extending outwards; uncus long, finger-shaped; gnathos reduced; valvae fused basally, deeply bifid to near the base and costa long and sickle-shaped; harpe thumb-shaped; saccus slender.

Distribution. Oriental Region.

Remarks. Prior to the present study, this genus consisted of only a single species and had been recorded from China by Zolotuhin & Witt (2009). Here, a second species from China is described.



Map 11. Distribution of *Gnathocinara* spp. mainly in China.

Key to the species of *Gnathocinara* in China

1. Wings white, without additional pattern elements *G. situla*
- Wings pale gray, with dark additional gray patterns *G. boi*

28. *Gnathocinara situla* (van Eecke, 1929) (FIGURES 18A–18B, 18D–18E)

Ocinara situla van Eecke, 1929, *Zool. Med. Leiden* 12: 62, pl. 11, figs. 1, 1a. TL: “Sumatra, Padang”. Syntypes: male, female (MNHL) [examined]. First recorded from China by Zolotuhin & Witt, 2009: 250.

Diagnosis. This species is characterized by white wings without dark gray patterning, the abdomen with dorsal black patches distinct and ending with long yellow hairs; the 8th sternite shinned; saccus not swollen apically.

Specimens examined. [YUNNAN] Mouding County: 22 males, 1300 m, 16.III–10.IV.2000, 25°19'N, 101°32'E, local collector leg. (MWM); Simao County: 10 males, 18 km south of Simao, Mt. Mangxiba, 22°28'N, 101°01'E, 16.III–10.IV.2000, local collector leg. (MWM); Xishuangbanna Dai Autonomous Prefecture: 34 males, Puwen, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); 1 male, 50 km north of Jinghong, Guanping, 1000 m, 9.I–6.II.2003, 22°10'N, 101°E, S. Murzin leg. (MWM).

Bionomics. The larval host is unknown. Adults appear from late spring to early winter in Yunnan Province.

Distribution. Mainland China (Yunnan), Vietnam, Thailand, Indonesia, Myanmar.

Remarks. Dierl (1978) reported the species only from Sumatra, but Zolotuhin & Witt (2009) considered that it was distributed northwards to Yunnan Province in China.

29. *Gnathocinara boi* Wang, X. & Zolotuhin, sp. nov. (FIGURES 18C, 18F)

Type locality: Tongzhong Forest Farm, Shangsi County, Shiwandashan National NR, Fangchenggang City, Guangxi Zhuang Autonomous Region, China.

Diagnosis. This species can be distinguished easily from *G. situla* based on the following characters: wings pale gray with dark gray bands; dorsum of abdomen gray without black patches; apex of the abdomen covered with gray hairs; uncus bifid; gnathos slim; saccus swollen apically.

Description. Male: wingspan 32–38 mm; forewing length 16–18 mm; body length 12–15 mm.

Head. Vertex densely covered with white scales; compound eyes large and elliptical dense black scales around them; labial palpus yellow, elongated downwards; antenna bipectinate, about 1/3 length of forewing, dark brown dorsally, basal 1/4 white.

Thorax. Dorsum yellowish-brown, covered with dense yellow scales. Fore- and hindwings grayish-white, covered with dense white scales; antemedial line broad and gray, from CuA₂ to inner margin; discal cell with a reniform stigma and a small gray dot; postmedial line broad and curved from M₁ curved to inner margin, represented by black scaling on the veins from M₁ to the costa; terminal line broader and gray, along the outer margin. Postmedial and terminal lines of hindwing not incomplete, unclear; discal cell with a gray spot; inner margin with 3 black spots. Postmedial and terminal lines on forewing underside broad and gray; discal cell with a small dot. Fore- and midlegs black, hindleg orange; tibia covered in brown scales.

Abdomen. Dorsum gray, without black patches, apex covered with gray long scales.

Male genitalia. Uncus bifurcate, each branch with a dorsal, sharply pointed process; valvae fused basally, deeply bifid to near the base, costa long and sickle-shaped; sacculus apically blunt, with sparse long scales, clearly thinner than costa; saccus well-developed, swollen distally, about 2/5 length of the whole male genitalia; aedeagus slender and long, smooth, the middle thinner than either end; coecum penis with a bifurcate apical process. Tergite VIII goblet-shaped, anterior margin with two long, very thin, laterally directed bars. Sternite VIII broad, posterior margin medially invaginated, V-shaped, apically with two pairs of processes, the outer broad and apically blunt, the inner longer, curved and sharply pointed; anterior margin with two long processes, apically curved outward and expanded.

Female. Unknown.

Specimens examined. Holotype, male, Dongzhong Forest Farm, Shangsi County, Shiwandashan National NR, Fangchenggang City, Guangxi Zhuang Autonomous Region, China, 8.IV.2002, light trapping, Min Wang & Guo-Hua Huang leg. (HUNAU). Paratypes: 1 male, same data as holotype (HUNAU); 3 males, Milv Village, Shiwandashan National NR, Fangchenggang City, Guangxi Zhuang Autonomous Region, China, 6.IV.2002, light trapping, Min Wang & Guo-Hua Huang leg. (SCAU); 5 males, Renzhuang Village, Jingxi County, Guangxi Zhuang Autonomous Region, China, 10–15.VII.2006, Wei Xiong & Liu-Sheng Chen leg. (SCAU); 1 male, Daoyin Village, Yinggeling National NR, Hainan Province, China, 4.XII.2005, Min Wang & Wei Xiong leg. (KUM); 1 male, Jianfengling National NR, Ledong County, Hainan Province, China, 23.X.2007, Min Wang leg. (HUNAU).

Bionomics. The larval host is unknown. Adults fly from late spring to winter.

Etymology. The species is named in honor of Dr. L.-Y. Bo, who was the supervisor of the senior author during her postdoctoral fellowship.

Distribution. Mainland China (Guangxi) and Hainan.

Remarks. The new species appears to be endemic to South China.

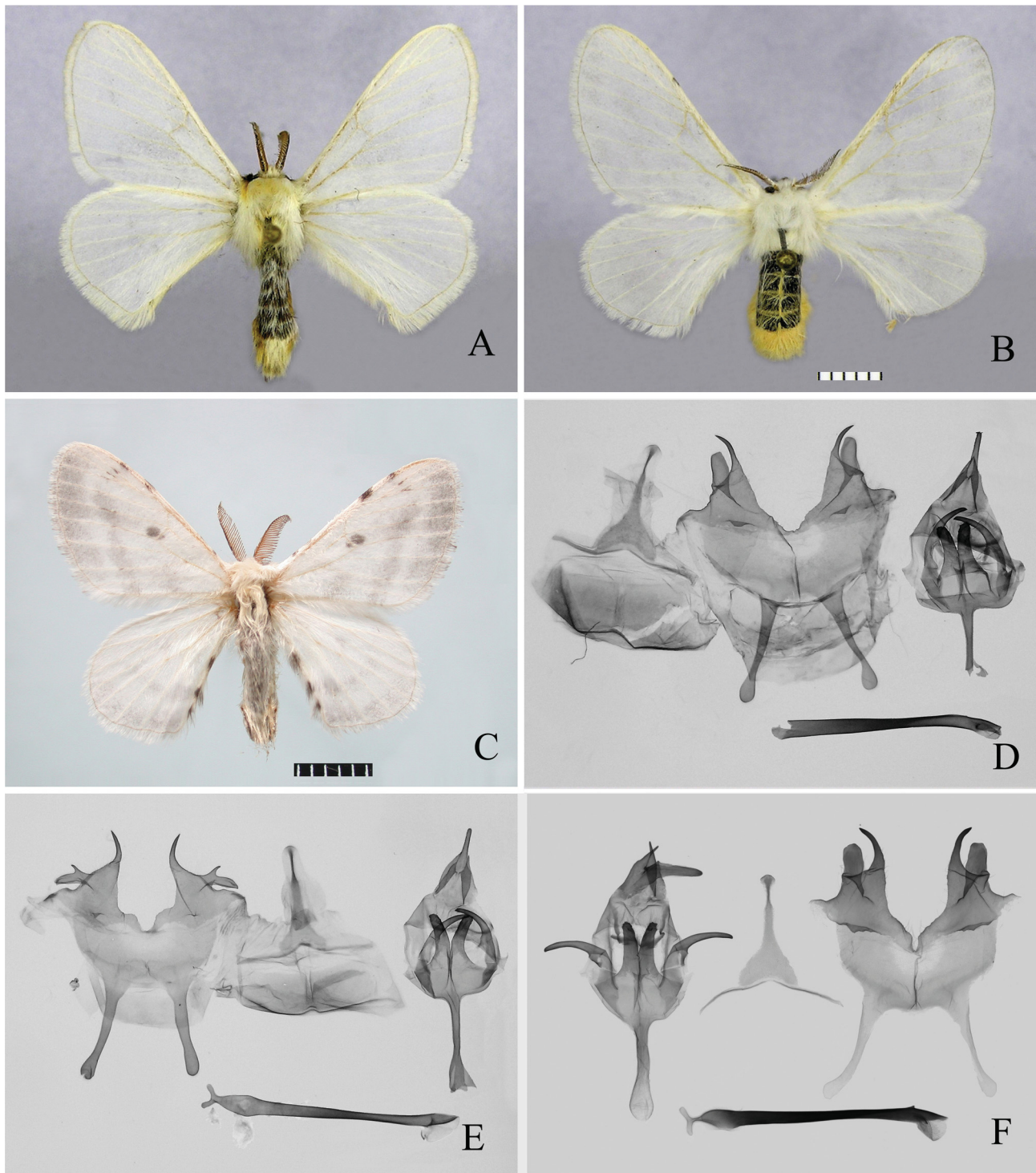


FIGURE 18. Adults and male genitalia of *Gnathocinara* spp. A. *G. situla*, male (Thailand); B. *G. situla*, female (Myanmar); C. *G. boi* sp. nov., male (Guangxi), holotype; D. *G. situla*, male genitalia (Yunnan); E. *G. situla*, male genitalia (Yunnan); F. *G. boi* sp. nov., male genitalia (Guangxi), holotype.

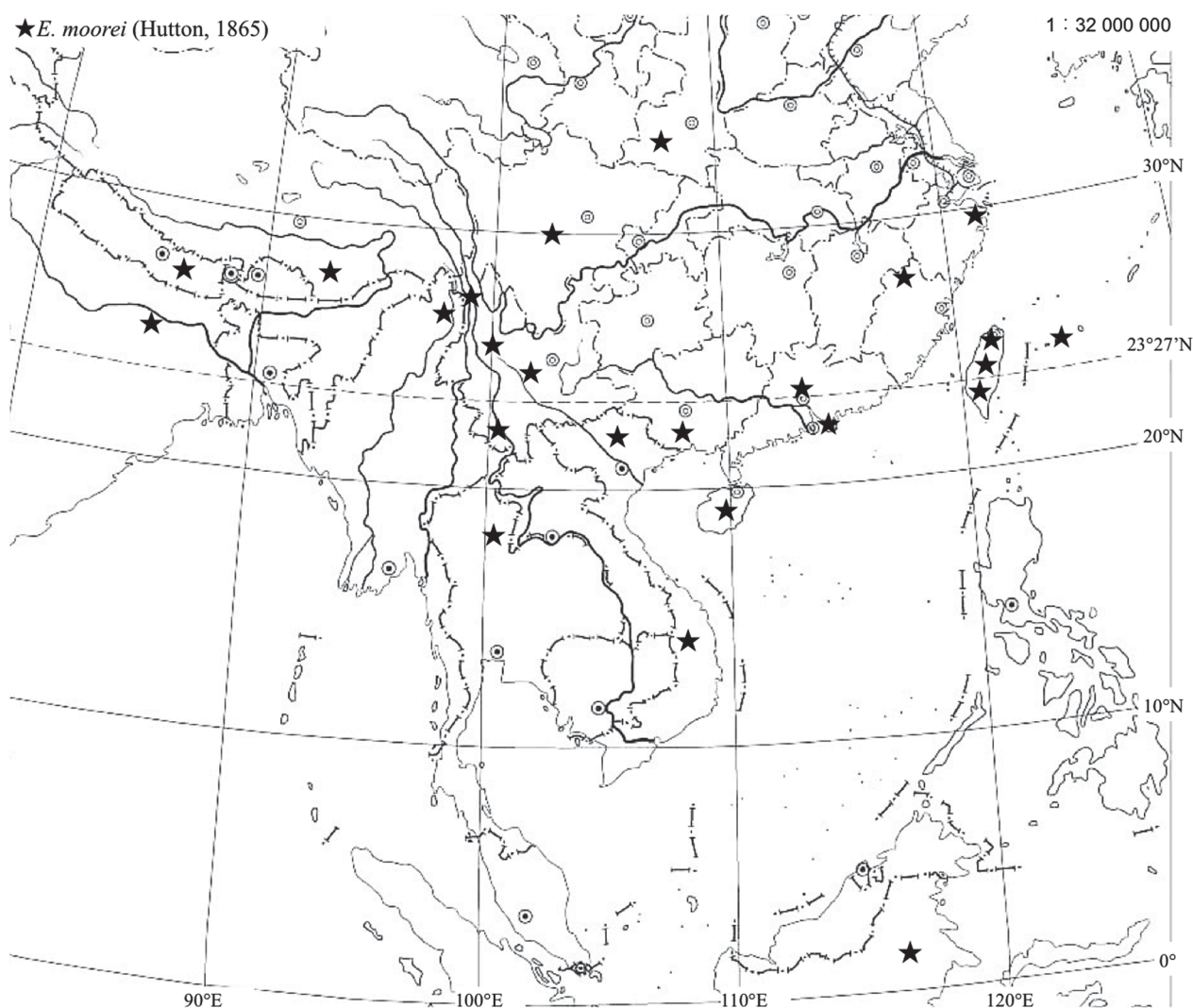
XII. *Ernolatia* Walker, 1862 (FIGURE 19)

Ernolatia Walker, 1862, *J. Proc. Linn. Soc. Lond. (Zool.)* 6: 131. Type species: *Ernolatia signata* Walker, 1862, by monotypy.
Ernolatia: Hampson, [1893], *Fauna Brit. India* I: 34; Strand, 1922, in Seitz, *Die Gross-Schmetterlinge der Erde*: 437.
Ocinara: Roepke, 1924, *Tijdschr. Ent.* 67: 174.

Diagnosis. The genus is unmistakable, characterized by the following characters: forewing cream or yellowish-white; outer margin angled at apex of M_3 ; discal cell with a thin crescentic spot; outer and inner margins of fore and hindwings with short fringes; uncus narrow, turret-shaped, shallowly bifid apically; gnathos reduced; valvae completely reduced, their role played by enlarged laterocaudal processes of sternum VIII; saccus broad and short; aedeagus short and straight.

Distribution. Oriental Region.

Remarks. The type species, *Ernolatia signata*, was originally described by Walker (1862) as a “liparid” moth (which would now refer to Noctuoidea, Erebidae, Lymantriinae) and was later moved to Bombycidae by Kirby (1892). The larva has small excrescences on T2, A2 and A5, and a horn on A8 (Roepke, 1924; Lin, 2005). Robinson *et al.* (2010) reported that the species *E. lida* has the host plants *Ficus septica* Burm. f., 1768 (= *F. leucantatoma* Poir.), *F. elastica* Roxb. ex Hornem., 1814 and *F. benjamina* L., 1767 (all Moraceae) in Southeast Asia. In this paper, a single *Ernolatia* species is recorded from China (Map 12).



Map 12. Distribution of *Ernolatia* spp. mainly in China

30. *Ernolatia moorei* (Hutton, 1865) (FIGURES 19A–19H)

Ocinara moorei Hutton, 1865, *Trans. ent. Soc. Lond.* 2 (3): 326. TL: “at Mussooree at an elevation of about 5,400 feet”.

Syntypes: male, female (BMNH) [examined].

Bombyx plana Walker, 1865, *List Specimens lepid. Insects Colln. Br. Mus.* 32: 575. TL: “Hong Kong”. Type: female (BMNH) [examined]. Synonymized by Dierl, (1978).

Ocinara bipuncta Chu & Wang, 1993, *Sinozoologia* 10: 228, fig. 8, pl. 1, fig. 8. TL: Putian, Fujian, China. Holotype, male in IZAS [not examined]. Synonymized by Zolotuhin & Witt (2009).

Ocinara moorei: Kirby, 1892, *A synonymic catalogue of Lepidoptera Heterocera* 1: 717; Hampson, [1893], *Fauna Brit. India* 1: 35; Strand, 1922, in Seitz, *Die Gross-Schmetterlinge der Erde*: 437; Roepke 1924, *Tijdschr. Ent.*: 177.

Ocinara plana: Hampson, 1892, *Fauna Brit. India* 1: 35; Strand, 1922, in Seitz, *Die Gross-Schmetterlinge der Erde*: 437.

Diagnosis. This species can be distinguished from other *Ernolatia* species by submarginal line of forewing gray and broad with a slimsy wave, the intersection of costa and submarginal line with a black spot, sternal processes shallowly bifid at the apex. Those characters can help us to distinguish this species from other Chinese bombycid moths.

Specimens examined. [ZHEJIANG] Linhai City: 4 male, Mt. Kuocangshan, Lingjiang river, 600–900 m, March to middle April 2000, S. Li leg. (MWM); [TAIWAN] 225 males and 46 females from different counties of Taiwan (Taitung, Taoyuan, Ping-Tung, Kaoshiung, Ilan, Nantou) (MWM); Pingtung County: 2 males, Kending, 10.X.2000, D. Anstine leg. (TFRI); Kaoshiung County: 1 male, Shanping, 25.II.1988, Yi-Bin Fan leg. (TFRI); Yilan County: 2 males, Fushan Botanical Garden, 13.VI.1991, Yi-Bin Fan leg. (TFRI); New Taipei City: 1 male, Aroukeng, Shengkeng, 14.II.1992, Yi-Bin Fan leg. (TFRI); Hualien County: 1 male, Lvshui, 23.I.1989, Yi-Bin Fan leg. (TFRI); 1 male, Tianxiang, 6.V.1990, Yi-Bin Fan leg. (TFRI); Nantou County: 1 male, Lianhuachi, Yuchi, 12.III.1990, Yi-Bin Fan leg. (TFRI); [GUANGDONG] Conghua County: 1 male, Liuxihe Liver, 1.VI.2006, Min Wang leg. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 1 male, Dongzhong Forest Farm, 14.XI.2001, Min Wang & Guo-Hua Huang leg. (SCAU); [HAINAN] Wuzhishan City (Wuzhishan National NR): 23 males and 1 female, 18°53'N, 109°43'E, 1500 m, 20.II–10.IV.2001, local collector leg. (MWM); Ledong County (Jianfengling National NR): 3 males, 29.XI.2003, Min Wang & Guo-Hua Huang leg. (SCAU); Baisha County (Yinggeling National NR): 1 male, 6.IX.2005, Min Wang leg. (SCAU); 1 male, Daoyin Village, 4.XII.2005, Min Wang & Wei Xiong leg. (SCAU); [SHAANXI] Taibai County: 1 female, Mts. Tsinling (Qinling), Mt. Taibaishan, 1600 m, Houzbenzi, 15.VI–15.X.1999, 33°53'N, 107°49'E, local collector leg. (MWM); [SICHUAN] Baoxing County: 1 male, Donglashan Grand Canyon, Longdong Town, 24.V.2004, Min Wang & Guo-Hua Huang leg. (HUNAU); [YUNNAN] Fugong County (42 km N Fugong, 1390 m, Lishadi (=Walo), 27°15'N, 98°55'E): 3 males and 3 females, 12–16.V.1999, R. Brechlin leg. (MWM); 5 males and 2 females, 15–27.X.1999, local collector leg. (MWM); Dali City: 9 males, 1200 m, 20 km south of Dali city, 16.III–10.IV.2000, 24°30'N, 100°01'E, local collector leg. (MWM); Simao County: 1 male, 18 km south of Simao county, Mt. Mangxiba, 22°28'N, 101°01'E, 26.II–20.III.1999, local collector leg. (MWM); Xishuangbanna Dai Autonomous Prefecture: 5 females, Puwen, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Yunlong County: 3 males, 13 km north of Caojian town, Fengshuining Mts., 2460 m, 10–23.VI.1999, R. Brechlin leg. (MWM); Mouding County: 2 females, 1300 m, 16.III–10.IV.2000, 25°19'N, 101°32'E, local collector leg. (MWM); [XIZANG (TIBET)] 1 female, Menia, Hotchu river, 2500–3000 m, June to August (MWM).

Bionomics. *Morus alba* Linn., 1753, *Ficus microcarpa* Linn., 1781 and *F. superba* Miq., 1867 (Moraceae) have all been reported as larval host plants in China (Chu & Wang, 1993; Lin, 2005), and *Ficus venosa* in India. Eggs are laid in line touching each other. The larvae belong to the common bombycid type (Plate 6H). Adults are found from lowland forests (500 m) to upper montane forests (200 m) throughout the year (Plate 6E–6G). Kishida (2011) reported that this species had been collected from Ishigaki Shima in Japan. In Taiwan, specimens have been collected throughout the year, with apparently 2–3 generations (known from January to July and again in October to December), at elevations from 210 to 1370 m, but also rarely known from up to 2320 m.

Distribution. Mainland China (Zhejiang, Fujian, Guangdong, Hongkong, Guangxi, Shannxi, Sichuan, Yunnan, Xizang), Hainan and Taiwan Islands, Japan, Vietnam, Indonesia, Thailand, Myanmar, Nepal, Sri Lanka, India.

Remarks. Based on the extreme similarity in appearance of the two species, *E. lida* (Moore, [1860]) and *E. moorei*, the ranges of these two species needs verification, especially in the southern parts of southeastern Asia (Holloway, 1987).

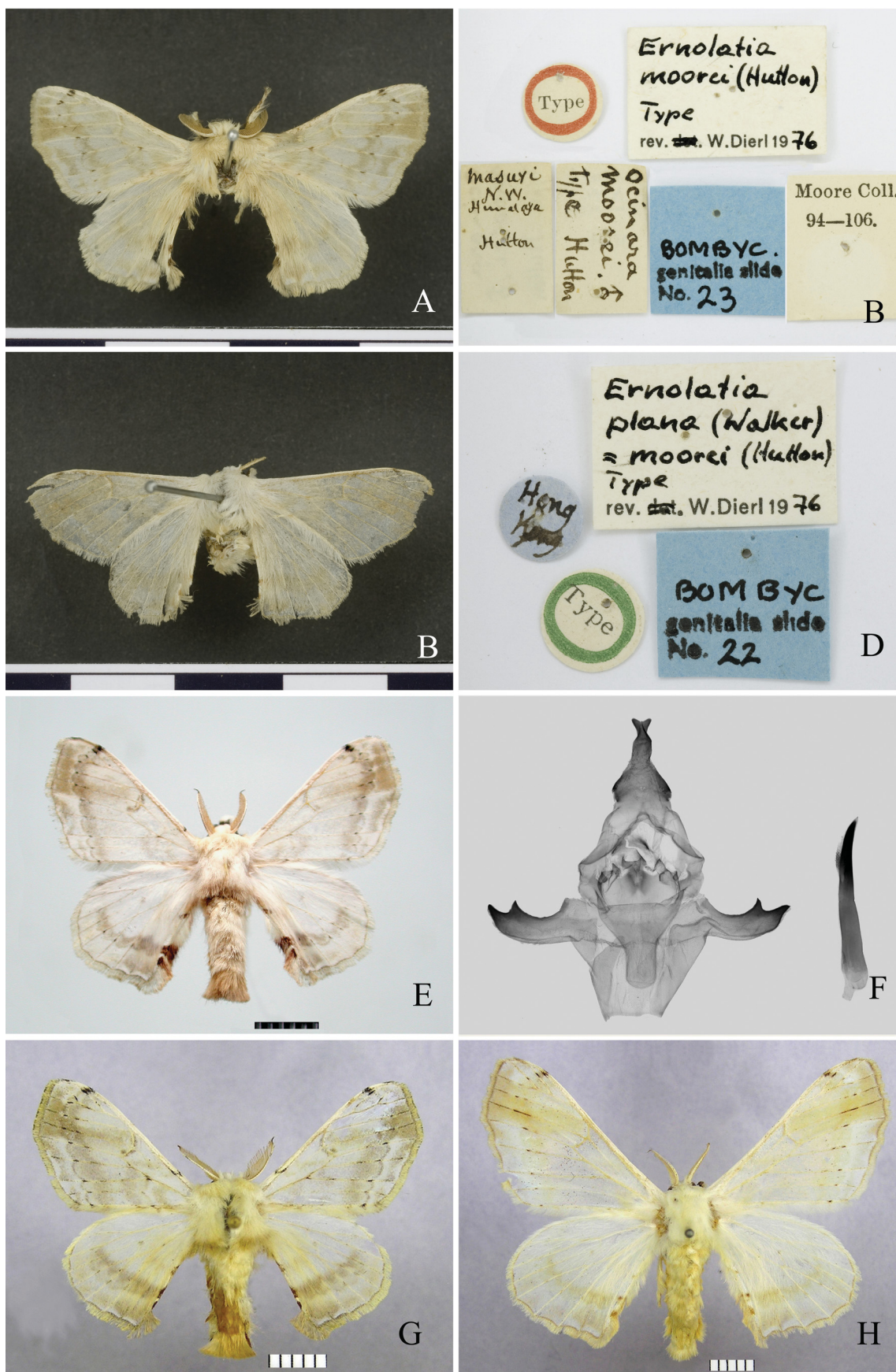


FIGURE 19. Adults and male genitalia of *Ernolatia moorei*. A–B. Male (Mussuree), holotype; C–D. Male (India), paratype; E. Male (Guangxi); F. Male genitalia (Guangxi); G. Male (Thailand); H. Female (Thailand).

Subfamily Oberthuerinae Kuznetsov & Stekolnikov, 1985

Diagnosis. Subfamily Oberthuerinae is endemic to Asia. The adults have "naked" eyes and male antennae with developed pectinate restricted to the basal half. The larvae feed on Symplocaceae, Aceraceae, Fabaceae, Moraceae, Pentaphylacaceae and Theaceae (Holloway, 1987; Sugi *et al.*, 1987; Chang, 1989), including the leaves of tea bushes (Roepke, 1924; Kalshoven *et al.*, 1951).

Distribution. Widely distributed in Indo-Malaya and also known from the southern Palaearctic.

Remarks. Typically, the larvae have long secondary hairs and a slender thorax. In most genera, there is a well-developed horn on abdominal VIII segment as known and the resting position with cocked anal segments and the head thrown back is characteristic.

Key to the genera of Oberthuerinae in China

1. Postmedial line of fore- and hindwings with a distinct white line reaching apex *Dalailama* Staudinger
- Postmedial line of fore- and hindwings without a distinct white line reaching apex 2
2. Forewing apex indistinctly falcate 3
- Forewing apex distinctly falcate 5
3. Aedeagus curved *Andraca* Walker
- Aedeagus straight 4
4. Valva apically boot-shaped *Pseudandraca* Miyata
- Valva apically constricted and blunt *Promustilia* Zolotuhin
5. Outer margin of fore- and hindwings serrate *Oberthueria* Kirby
- Outer margin of fore- and hindwings entire 6
6. Forewing without conspicuous pattern elements other than a kidney-shaped spot on the outer margin 7
- Forewing with well-developed transverse bands and lines in addition to a kidney-shaped spot on the outer margin 8
7. Uncus bifid, broad, with two widely separated and apically blunt lobes *Smerkata* Zolotuhin
- Uncus bifid, narrow, with two close and apically pointed lobes *Comparmustilia* **gen. nov.**
8. Uncus broad, bifid, with lobes pointed apically; gnathos well developed as a pair of long, narrow, pointed lobes .
..... *Mustilia* Walker
- Uncus narrow, bifid, with lobes blunt apically; gnathos reduced and indistinct *Mustilizans* Yang

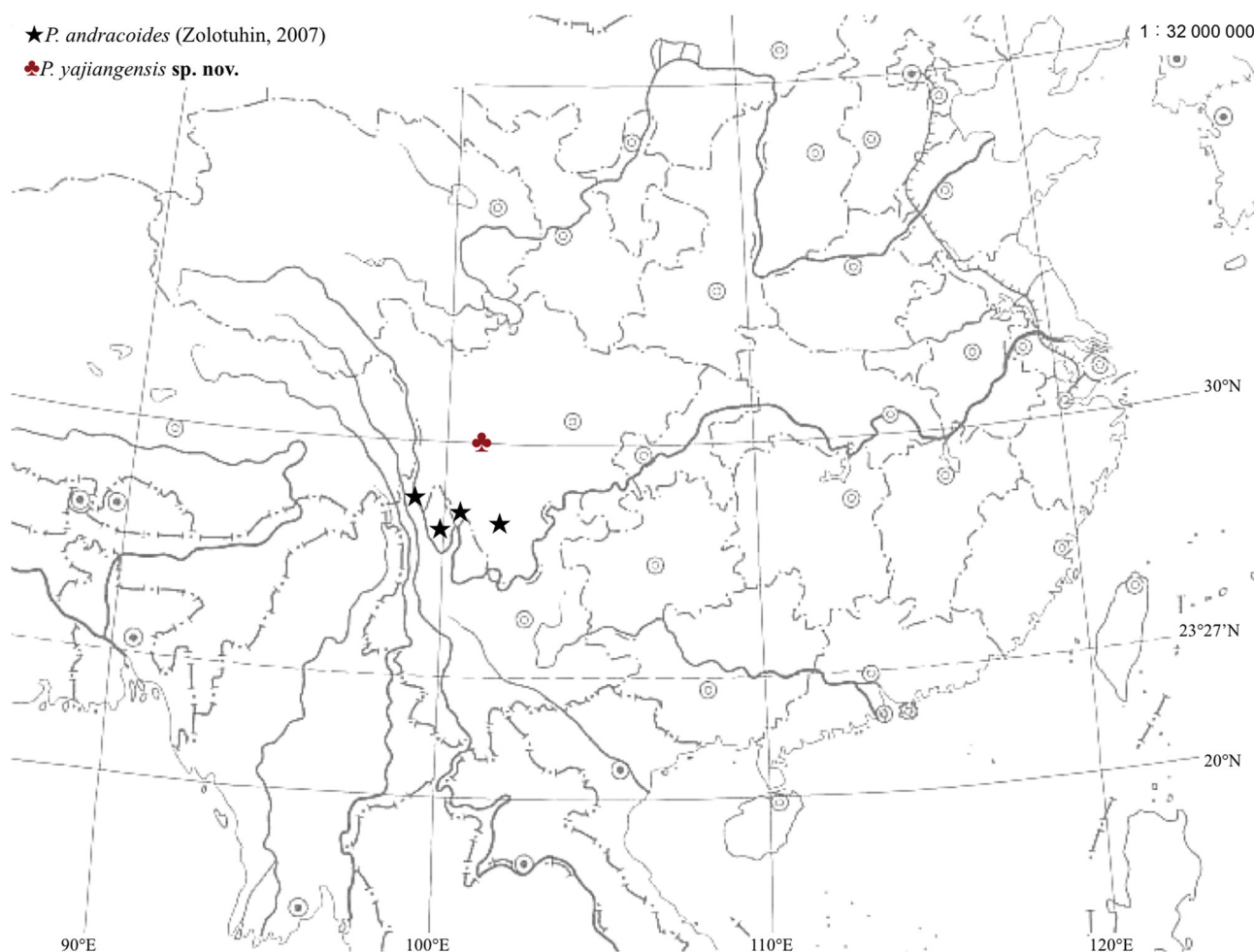
XIII. *Promustilia* Zolotuhin, 2007 (FIGURE 20) **stat. nov.**

Promustilia Zolotuhin, 2007, *Neue ent. Nachr.* 60: 199. Originally erected as a subgenus of *Mustilizans* Yang, 1993. Type species: *Mustilizans (Promustilia) andracoides* Zolotuhin, 2007, by original designation.

Diagnosis. Characterized by the following features: wings ochre-brown; antennae with long pectinations basally and serrate distally; forewings apically obscurely falcate; antemedial and postmedial lines sinuate; discal cell with a black spot; hindwing with postmedial line straight and discal cell with a black spot; uncus bifid to halfway; valva slightly constricted distally with a blunt apex; aedeagus apically expanded, vesica covered with dense spinules.

Distribution. China.

Remarks. We here raise this genus to full genus status based on the wing pattern and valva and aedeagus morphology, which is different from all other bombycid genera. This genus consists of two species endemic to south-central China (Map 13).



Map 13. Distribution of *Promustilia* spp. mainly in China.

Key to the species of *Promustilia* in China

1. Forewing submarginal line markedly wavy; saccus broad *P. andracoides*
- Forewing submarginal line straight over most of its length; saccus narrow. *P. yajiangensis* sp. nov.

31. *Promustilia andracoides* (Zolotuhin, 2007) (FIGURES 20A–20B, 20D)

Mustilizans (*Promustilia*) *andracoides* Zolotuhin, 2007, *Neue ent. Nachr.* 60: 199. TL: “China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m”. Holotype: male (MWM) [examined].

Andraca gracilis Butler, 1885: Chu & Wang, 1993, *Sinozoologia* 10: 243; Chu & Wang, 1996, *Fauna Sinica Insects* 5: 57. Misidentification.

Diagnosis. Characterized by forewings with a well-developed and almost straight postmedial line that is broader and curved inwards near the costa; submarginal line clearly wavy; saccus broad; aedeagus straight.

Specimens examined. [YUNNAN] 1 male, holotype with label “Holo, Li-Kiang, ca. 4000 m, Prov. Nord-Yuennan, 7.VII.1935, H. Hone” (MWM); 2 males, paratypes, A-tun-tse (Nord Yunnan), obere Höhe (ca 4500 m), 9.VII.1936, H. Hone leg. (MWM); [SICHUAN] Dechang County: 3 males, Mt. Abulandanshan, 27°25'N, 102°06'E, July 2005, Siniaev & his team leg. (MWM); Yanyuan County: 1 male, Mian Mian Shan, 20 km west of Lugu lake, 27°42'N, 100°34'E, August 2005, Siniaev & his team leg. (MWM); [YUNNAN] Lijiang City: 1 male, Lugu lake, 13.VIII.2002, Ming-Yi Tian leg. (SCAU); 2 males, Lijiang/Zhongdian, near Tuguancun, 27°29'N, 99°53'E, 24–25.V.2012, 3200 m, Floriani leg. (MWM); Zhongdian County: 7 males, near Zhongdian, 27°24'N,

99°40'E, 17.V.2012, 3350 m, Floriani leg. (MWM); Deqin County: 1 male, Mt. Meilixueshan, 16.VIII.2002, Ming-Yi Tian leg. (SCAU); 3 males, 30 km NE Deqin, 28°31'N, 98°49'E, 20.V.2012, 2600 m, Floriani leg. (MWM); 2 males, env. Bailakon Pass, 3400–3600 m, 28.V–7.VI.2006, Murzin leg. (MWM).

Bionomics. *Stewartia pseudocamellia* Maxim. (Theaceae) is its recorded larval host.

Distribution. Mainland China (Sichuan, Yunnan).

Remarks. Chu & Wang (1993, 1996) recorded the specimens from Deqin County, Lijiang City, Zhongdian County and Jianchuan County, but they misidentified them as *Andraca gracilis* Butler.

32. *Promustilia yajiangensis* Wang, X. & Zolotuhin, sp. nov. (FIGURES 20C, 20E)

Type locality: Bajiaolou Town, Yajiang County, Sichuan Province, China.

Diagnosis. This species is very similar to *P. andracoides*, but can be distinguished by the following characters: forewing with postmedial line obscure; submarginal line almost straight over most of its length, edged with white; hindwing with postmedial line straight, bordered with white; saccus narrow.

Description. Male: Wingspan = 35–37 mm; forewing length = 19–22 mm; antennal length = 6–9 mm; body length = 14–16 mm.

Head. Vertex covered with yellow hair; antennae brown, basal 2/3 pectinate, apical 1/3 serrate, base dorsally half white, half dark brown.

Thorax. Densely covered dorsally with brown hairs over ocher; ventrally brown; forewing dark brown over distal half, lower half light brown; costa and inner edge straight; costa at 1/5 from base with a black spot; discal cell with a small black spot; antemedial and postmedial lines almost straight, dark brown; the outer edge of the latter highlighted in white; hindwing is divided into pale and dark brown halves as the forewing; discal cell with a small black spot; postmedial line straight, dark brown, outer edge highlighted in white; inner edge with dark brown fringes, slightly concave near tornus.

Abdomen. Densely covered with black hairs, mixed with a small amount of red-brown and reddish-brown hairs..

Male genitalia. Sternite 8 ovoid, posterior margin slightly concave, anterior margin broadly rounded. Uncus bifid, the lobes finger-shaped; gnathos a broadly triangular and apically rounded plate; valvae large, broad basally, apically angled and broadly rounded, with slender hairs; aedeagus expanded apically, ventral margin produced as a short, blunt process; vesica covered with numerous small sharply pointed cornuti arranged into several fields.

Female. Unknown.

Specimens examined. Holotype, male, Bajiaolou Town, Yajiang County, Sichuan Province, China, 6.VIII.2004, Min Wang & Xiao-Ling Fan leg. (SCAU); Paratype, 1 male, same data as holotype but 23.VII.2009, Min Wang & Guo-Hua Huang leg. (HUNAU).

Bionomics. Larval host unknown.

Etymology. The scientific name is derived from the type locality, Yajiang county.

Distribution. Mainland China (Sichuan).

Remarks. This new species is endemic to Sichuan Province.

XIV. *Oberthueria* Kirby, 1892 (FIGURES 21–22)

Oberthueria Kirby, 1892, *Syn. Cat. Lepid. Het.*, 1: 720. Type species: *Euphranor caeca* Oberthür, 1880, by monotypy.

Oberthueria Staudinger, 1892, in Romanoff, *Mém. Lépid.*: 337 Type species: *Euphranor caeca* Oberthür, 1880, by monotypy (a junior homonym and junior objective synonym of *Oberthueria* Kirby, 1892).

Oberthüria: Staudinger, 1892, in Romanoff, *Mémoires sur les lepidoptères (Mém. Lépid.)* 6: 337. (incorrect original spelling).

Euphraor: Kirby, 1892, *Syn. Cat. Lepid. Het.* 1: 720 (incorrect subsequent spelling).

Euphranor Oberthür, 1880, *Études d'Entomologie (Étud. ent.)* 5: 40. Type species: *Euphranor caeca* Oberthür, 1880, by monotypy (a junior homonym of *Euphranor* Herrich-Schäffer, 1855 (Lepidoptera, Saturniidae)).

Diagnosis. Characterized by the following features: wings reddish-brown or yellowish-brown; forewing apex falcate; antemedial and postmedial lines serrate; submarginal line straight, outer edge highlighted in white, curved inwards near costa; outer margin with one to several teeth; hindwing with postmedial line serrate; submarginal line

slightly almost straight edged with white; outer margin with variably developed teeth; uncus forcipate; valvae asymmetrical.

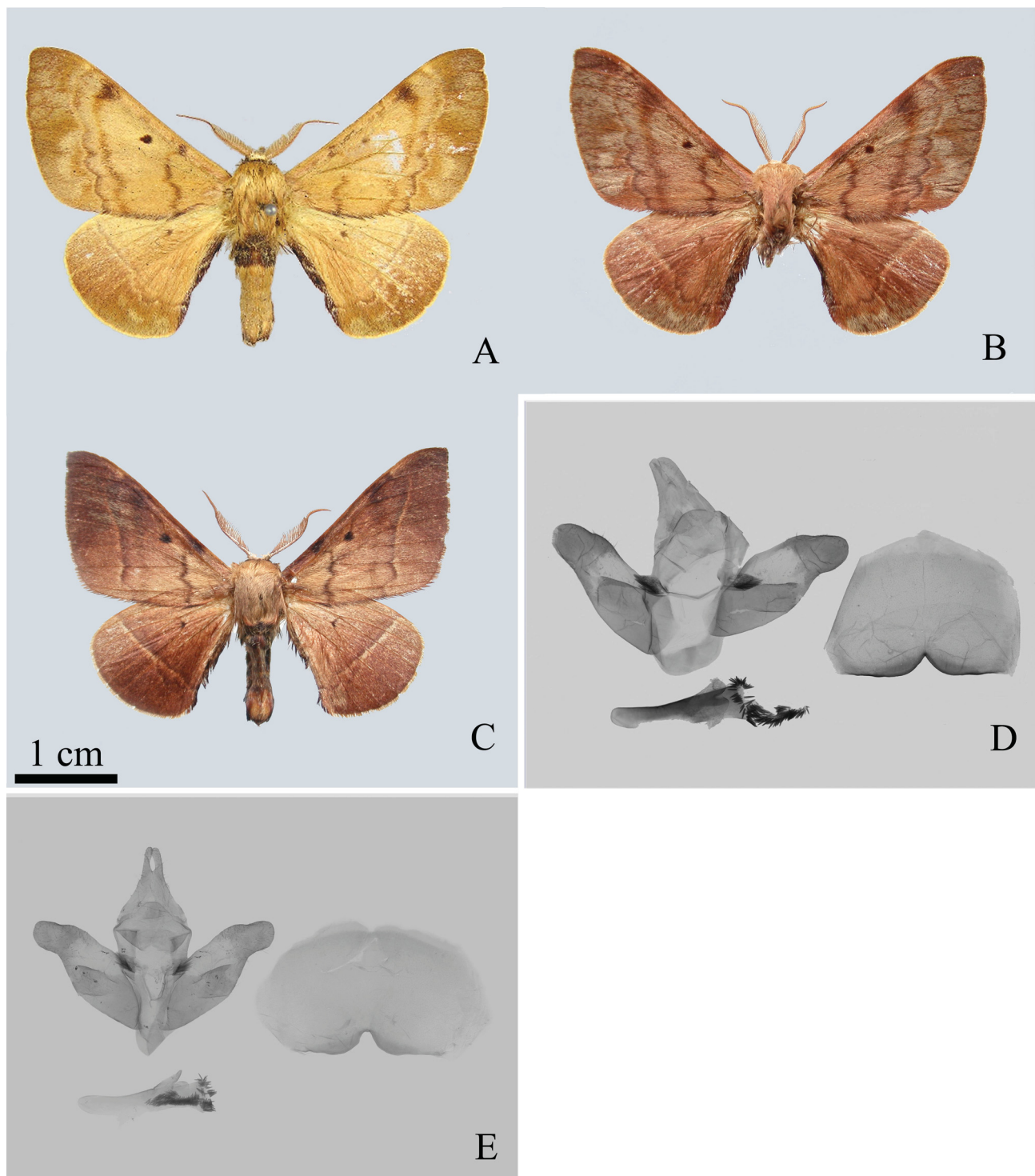
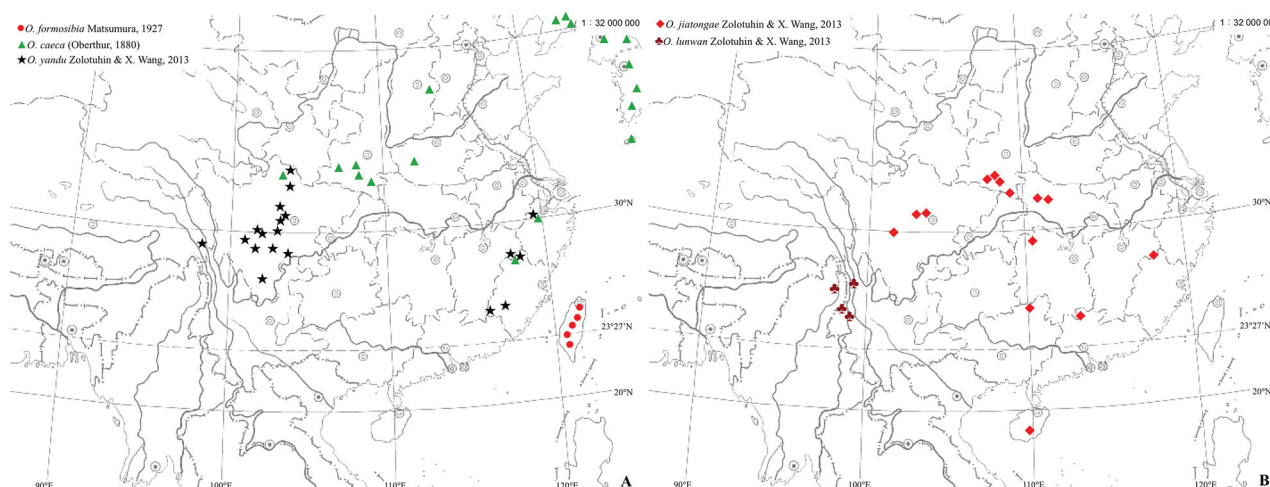


FIGURE 20. Adults and male genitalia of *Promustilia* spp. A. *P. andracoides*, male (Yunnan), holotype; B. *P. andracoides*, male (Yunnan); C. *P. yajiangensis* **sp. nov.**, male (Sichuan), holotype; D. *P. andracoides*, male genitalia (Yunnan); E. *P. yajiangensis* **sp. nov.**, male genitalia (Sichuan), holotype.

Distribution. Sino-Pacific area, from Russian Far East and Japan to southern China and NE Myanmar).

Remarks. Zolotuhin & Wang (2013) revised *Oberthueria* to include six species based on morphological characters and partial sequences of the mitochondrial gene, cytochrome-c oxidase I (COI) (DNA barcodes).

Robinson *et al.* (2001) and Zolotuhin & Wang (2013) recorded the larval host plants as species of Aceraceae (e.g. *Acer palmatum* Thunb., 1783, *A. septilobum* Fang, 1932, *A. mono* Maxim., 1857), Fagaceae (*Quercus acutissima* Carruth., 1862, *Q. variabilis* Bl., 1850 and other species of oaks), Moraceae (*Morus alba* Linn., 1753) and Theaceae (*Camellia japonica* Linn., 1753). The larvae are unique in having an extremely long anal horn (Plate 7A–7D). In the present paper, five of the six species of *Oberthueria* are recorded from China (Map 14).



Map 14. Distribution of *Oberthueria* spp. mainly in China.

Key to the species of *Oberthueria* in China

1. Forewing outer margin with one tooth at end of CuA1 2
- Forewing outer margin of forewing with several teeth. 3
2. Wings reddish-brown *O. yandu*
- Wings yellowish-brown *O. jiatongae*
3. Right valva with a long sickle-shaped process 4
- Right valva without a long sickle-shaped process *O. lunwan*
4. Wings chestnut orange; left valva with a short and broad sickle-shaped basal process. *O. caeca*
- Wings dark orange-yellow; left valva with a long and slender sickle-shaped basal process.. *O. formosibia*

33. *Oberthueria formosibia* Matsumura, 1927 (FIGURES 21A–21D, 22E)

Oberthueria formosibia Matsumura, 1927, *Journal of the Faculty of Agriculture, Hokkaido Imperial University (J. Coll. Agric. Hokkaido Univ.)*, 19: 50, pl. 5, fig. 45. TL: “Formosa (Horisha)=(Taiwan (Nantou))”. Holotype designation by monotypy: male (HUM) [examined]. The published description referred to only one specimen (the holotype), but two specimens with “type” labels were found in HUM.

Oberthueria falcigera Butler, 1878: Chu & Wang, 1993, *Sinozoologia* 10: 237; Chu & Wang, 1996, *Fauna Sinica Insecta* 5: 48. Misidentification.

Diagnosis. Characterized by its strongly serrate wing margins, contrasting pattern, non-bifurcate hindwing tail and slender harpe.

Specimens examined. [TAIWAN] 1 male, Holotype deposited in HUM with the label “male, holotype of *Oberthueria formosibia* Matsumura, 1927, Baibara, 22.VII.1925, Kikuchi leg.”; 40 males, from different localities of Taiwan (Ilan, Taitung, Nantou, Taoyuan, Hualien, Miaoli) (MWM); Yilan County: 2 females, Fushan Botanic Garden, 18.VIII.2010, 500 m, Guo-Hua Huang leg. (HUNAU); 1 male and 1 female, Mingchi, 1050 m, 23.V.2012, Shipher Wu leg. (TFRI); Nantou County: 1 male and 1 female, Renlun, 1400 m, 22.IV.2010, Shipher Wu leg. (TFRI); Hualien County: 2 males, Ci'en, 1950 m, 25.V.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Guanyuan, 2400 m, 13.IX.2012, Shipher Wu leg. (TFRI).

Bionomics. The species is apparently montane, being known from altitudes of 500–2900 m, and with two generations per year. Moths are on the wing from late March to early July and again from August to early October (Plate 7E–7G). The larvae feed on *Acer* species (Plate 7H, 8A–8B), a unique host plant association in Bombycidae. It is illustrated, with a cocoon and a live female, at <http://caterpillartaiwan.blogspot.co.uk/search/label/Endromidae>. The larvae have a peculiar cobra-like thoracic “hood” and a long anal horn. Chu and Wang (1996) also reported that the larvae fed on *Quercus* spp.

Distribution. Taiwan.

Remarks. The species is restricted to Taiwan. It was incorrectly recorded from the continent by Zolotuhin (1995).

34. *Oberthueria caeca* (Oberthür, 1880) (FIGURES 21E, 22A)

Euphranor caeca Oberthür, 1880, *Etudes d'Entomologie* 5: 40, pl. 6, fig. 2. TL: [Far East of Russia], [south of Vladivostok], “Ascold”. Syntypes: 2 males (BMNH) [examined].

Oberthueria falcigera Butler, 1878; Chu & Wang, L.Y. (1996: 48). Misidentification.

Diagnosis. This species is darker ground color without a pinkish tint and, especially, the angled but not bifurcate hindwing tails most clearly distinguish it from its congeners.

Specimens examined. [HEILONGJIANG] Wudalianchi City: 1 male, Xiaoxinganling, 1800 m, July 2000, native collector leg. (MWM); 1 male, Erzendianzy, 45°40'N, 127°10'E, Manchuria, June 1924, V. Tolmachov leg. (ZFMK); [ZHEJIANG] 2 males, Chekiang (Zhejiang), West-Tien-Mu-Shan (Xitianmushan National NR), 1600 m, 26.VI.1932, H. Höne leg. (ZFMK); [FUJIAN] 8 males, Fukien (Fujian): Kuatun (Guadun), Wuyishan City, Chong'an District, 2300 m, 27°40'N, 117°40'E, 26.V.1938, J. Klapperich leg. (ZFMK); [SHANXI] 5 males, Mien-shan (Mian Shan), Jiexiu City, Obere Hoehe, 2000 m, 28.VII.1937, H. Hoene leg. (ZFMK); [HENAN] Songxian County (Luoyang City): 2 males, Baiyunshan National NR, 14.VIII.2008, Guo-Hua Huang leg. (HUNAU); [SHAANXI] Taibai County (Taibaishan Mts (S), Tsinling Mts, Houzhenzi [Mts. Qinling, Mt. Taibaishan, Houzhenzi town], 33°51'N, 107°49'E, 1600 m): 2 males, 27.V–08.VI 1999, local collector leg. (MWM); 1 male, summer 1999 (MWM); 2 males, June 1999 (MWM); 4 males, 1–12.VIII.1999 (MWM); Mts. Qinling: 1 male, 14.VII.2006, Liu-Sheng Chen leg. (SCAU); 2 males, 33°50'N, 107°44'E, 1500 m, IV. 2005, Siniaev & his team leg. (MWM); 5 males, 33°51'N, 107°57'E, 1500 m, 20.IV–11.V.1999, Sinjaev & Plutenko leg. (MWM); 1 male, 33°55'N, 107°44'E, 2200 m, June 2004, Sinjaev & his team leg. (MWM); 1 male, Mt. Tapaishan (Taibaishan), Mts. Tsinling (Qinling), Sued-Shensi (?), 1700 m, 17.V.1936, H. Höne leg. (ZFMK); 1 male, Mt. Tapaishan (Taibaishan), Mts. Tsinling (Qinling), Sued-Shensi (?), 3000 m, 2.VII.1936, H. Höne leg. (ZFMK); [SICHUAN] 1 female, 2100 m, north Sichuan, Mts MinShap, Jiuzhaigou vicinity, 12–16.VII.1994, C. Della Bruna leg. (ZFMK).

Bionomics. The larval host plants are *Acer palmatum* Thunb., 1783, *A. septilobum* Fang, 1932, *A. mono* Maxim., 1857 (all Aceraceae), *Quercus variabilis* Bl., 1850 (Fagaceae) and *Morus alba* Linn., 1753 (Moraceae) (Chu & Wang, 1996; Park *et al.*, 1999).

Distribution. Mainland China (Heilongjiang, Jilin, Zhejiang, Fujian, Shanxi, Henan, Shaanxi, Sichuan), Russian Far East, North Korea, South Korea.

Remarks. The species is typical of lowland broad-leaved, humid forests. In Russia, the species has two generations a year, with moths on the wing from May to June and from July to August. In Korea, the species appears from April to September (Park *et al.*, 1999).

35. *Oberthueria yandu* Zolotuhin & Wang, X., 2013 (FIGURES 21F, 22B)

Oberthueria yandu Zolotuhin & Wang, X., 2013, *Zootaxa*, 3693 (4): 472. TL: “China, Sichuan, Wolong Reserve, Siguliangshan, 31°09' N, 103°20' E”.

Oberthüria caeca Oberthür, 1880; Chu & Wang, L.Y. (1983: 408, Nr 2944) Misidentification.

Oberthüreria caeca Oberthür, 1880; Chu & Wang, L.Y. (1996: 48) Misidentification.

Oberthueria formosibia Matsumura, 1927; Zolotuhin (1996: 384) Misidentification.

Diagnosis. The species resembles *O. formosibia* in general appearance and colour, but is slightly smaller, paler, with shorter marginal serrations on the wings and a bilobed hindwing tail (these two points are always separated in *O. formosibia*).

Specimens examined. [SICHUAN] Wenchuan County: 1 male, holotype deposited in MWM with the label “China, Sichuan, Wolong Reserve, Siguliangshan, 31°09’ N, 103°20’ E, June 2005, Sinjaev & his team leg.; Paratypes: Dujiangyan City (Mts. Qingchenghoushan): 85 males, 1400 m, 21–25.VIII.2005, S.V.M. Murzin leg. (MWM); 2 males, 1500 m, 6–13.VIII.2010, S. Murzin leg. (MWM); 36 males, 1500 m, 5.VI.2004, S.V. M. Murzin leg. (MWM); Baoxing County (Donglashandaxiagu): 1 male, 25.VII.2009, Guo-Hua Huang leg. (HUNAU); 1 male, 18.VI.2011, 1950 m, Min Wang leg. (SCAU); Yingjing County (Mt. Nibashan): 1 male, 27.VII.2009, Guo-Hua Huang leg. (HUNAU); 2 males, 14.VII.2009, Min Wang & Yang Long leg. (SCAU); Jiuzhaigou County (Mt. Minshan): 1 female, 2100 m, 12–16.VII.1994, C. Della Bruna leg. (ZFMK); Luding County: 2 males, Moxi Town, 15.VII.2009, Min Wang & Yang Long leg. (SCAU); 1 male, Mts. Daxueshan, Mt. Gonggashan, 29°41’N, 101°58’E, 14–19.VII.1999, Sinjaev & Plutenko leg. (MWM); 1 male, Mt. Erlangshan, 2560 m, 19–23.VII.2004, S. Murzin leg. (MWM); 1 male, Moxi Town, 30.VII.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 8 males, Gonggashan, 2200 m, 29°41’N, 101°58’E, 25.V–08.VI.2001, Sinjaev & local collector leg. (MWM); Dayi County: 3 males, Laolinkou, 1900 m, 28°21’N, 103°26’E, 26.VI–12.VII.2008, V. Sinjaev leg. (MWM); Wenchuan County (Wolong National NR): 4 males, Mt. Siguliangshan, 31°09’N, 103°20’E, May 2005, Sinjaev & his team leg. (MWM); Lixian County (near the city, 2100 m, 31°24’N, 103°09’E): 2 males, 30.VII.2011, Floriani & Saldaitis leg. (MWM); 15 males, 30.VII.2011, Floriani & Saldaitis leg. (A. Floriani collection, Milan, Italy); 2 males, road Yaan/Kangding, Mt. Erlangshan, 2200 m, 02.VIII.2011, 29°87’N, 102°30’E, Floriani & Saldaitis leg. (A. Floriani collection, Milan, Italy); 2 males, road Dawe/Lushan, Mt. Xilingxueshan, 2800 m, 21.VII.2011, 30°51’N, 102°46’E, Floriani & Saldaitis leg. (A. Floriani collection, Milan, Italy). Other material: [ZHEJIANG] Lin’an County: 15 males and 2 females, Qingliangfeng NR, 24.VII–1.VIII.2011, 1000–1400 m, Xing Wang & Yuan-Yuan Liu leg. (HUNAU); 2 males, West Tianmushan, 1600 m, 8–26.VI.1932, H. Höne leg. (ZFMK); [JIANGXI] Guixi County (Mt. Wuyishan): 3 males, Jiangxi-Fujian border, 50 km southeast of Yingtan city, 27°56’N, 117°25’E, 1600 m, April 2002, Sinjaev & local collector leg. (MWM); [FUJIAN] Wuyishan City (Wuyishan National NR): 1 male, 19.V.2011, 1100 m, Min Wang & Hou-Shuai Wang leg. (SCAU); 9 males, Kuatun, 2300 m, 27°40’N, 117°40’E, 17–28.V.1938, J. Klapperich leg. (ZFMK); [HENAN] Luoyang City: 2 males, Mt. Baiyunshan, 14–15.VIII.2008, Guo-Hua Huang leg. (HUNAU); [SICHUAN] Dechang County: 1 male, Mt. Abulandanshan, 27°25’N, 102°06’E, July 2005, Sinjaev & his team leg. (MWM); [XIZANG (TIBET)] Zuogong County: 2 males, Meilixueshan, Yanging env., July 1999, Wang & Li leg. (SMFL).

Bionomics. Apparently a montane species known from altitudes of 500–2900 m, with two generations per year. Moths are on the wing from late March to early July and again from August to early October (Zolotuhin & Wang, 2013). The species was collected in deep mountain valleys in degraded secondary rather than humid primary forest.

Distribution. Mainland China (Zhejiang, Jiangxi, Fujian, Henan, Guangdong, Sichuan, Xizang (Tibet))

Remarks. The species has mostly been found in montane parts of Sichuan Province in China but is also known east to Zhejiang, Jiangxi and Fujian, and west to east Tibet.

36. *Oberthueria jiatongae* Zolotuhin & Wang, X., 2013 (FIGURES 21G, 22C)

Oberthueria jiatongae Zolotuhin & Wang, X., 2013, *Zootaxa* 3693 (4): 474. TL: “China, prov. Shaanxi, Taibaishan Mts (S), Tsinling Mts., Foping NT, 33°51’N, 107°57’E, 1500 m”.

Diagnosis. This species is easily identified by its small size, contrasting ‘grey-scaled’ coloration, prominent wing pattern and short but distinct wing serrations.

Specimens examined. [SHAANXI] 1 male, Holotype deposited in MWM with the label “China, prov. Shaanxi, Taibaishan Mts (S), Tsinling Mts., Foping NT, 33°51’N, 107°57’E, 1500 m, 20.IV–11.V.1999, Sinjaev & Plutenko leg.”; Paratypes: same data (except collection date) as holotype: 1 male, July 2001, local collector leg. (MWM); 6 males, May 2002 (MWM); 3 males, June 1999 (MWM); 1 male, summer 1999 (MWM); 1 male, 1–12.VIII.1999 (MWM); 1 male, July 2001 (MWM); 38 males and 1 female, 20.IV–11.V.1999, Sinjaev & Plutenko leg. (MWM); Mt. Taibaishan ([Mts. Qinling] Tsinling Mts, Houzhenzi, 33°51’N, 107°49’E, 1500 m): 4 males, 27.V–08.VI.1999, local collector leg. (MWM); 2 males, 05–10.V.2000, Sinjaev & Plutenko leg. (MWM); 2 males, 05–10.V.2000, Sinjaev & Plutenko leg. (MWM); Taibaishan National Park: 1 male, 33°35’N, 107°43’E, 1300–1500 m, 20.VIII–4.IX.1998, V. Murzin & V. Sinjaev leg. (MWM); Mt. Dabashan: 2 males, 15 km south of Shouman village, 1800 m, 32°08’N, 108°37’E, 25.V–14.VI.2000, Sinjaev & Plutenko leg. (MWM). Other

material: [JIANGXI] Guixi County (Yingtian City): 2 males, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, July 2004, Sinjaev & his team leg. (MWM); [HUBEI] Shenlongjia Forest District: 3 males, Mt. Dabashan, Songluohe, 31°37'N, 110°33'E, 1300–1800 m, May 2006, Siniaev & his team leg. (MWM); Nanzhang County: 2 males, Mt. Niutoushan, 1550 m, August 2000, native collector leg. (MWM); [HUNAN] Sangzhi County (Badagongshan National NR, Mt. Tianpingshan): 1 male, 27.V.2009, Guo-Hua Huang leg. (HUNAU); 1 male, 10.VIII.2009, Hou-Shuai Wang leg. (SCAU); 4 male, 13–14.VIII.2014, Guo-Hua Huang & Min Wang leg. (HUNAU); [GUANGDONG] Ruyuan County (Nanling National NR): 39 males and 3 females, 4–5.VI.2011, 1300 m, Xing Wang & Guo-Hua Huang leg. (HUNAU); 1 male, 22.VI.2003, Guo-Hua Huang leg. (SCAU); 1 male, 16–20.VIII.2003, Guo-Hua Huang leg. (SCAU); 1 male, 16.VII. 2003, Liu-Sheng Chen & Hong Lin leg. (SCAU); 1 male, 25.VI.2008, Hou-Shuai Wang leg. (SCAU); 1 male, 2.VII.2008, Min Wang leg. (SCAU); 2 males, 10.VIII.2009, Min Wang leg. (SCAU); 4 males, 31.V.2008, Min Wang & Hou-Shuai Wang leg. (SCAU); 2 males, 29.VII.2008, Yang Long leg. (SCAU); 6 males, 8.V.2009, Xue-Ping Li leg. (SCAU); 7 males, 18.V.2009, Hou-Shuai Wang & Yang Long leg. (SCAU); [GUANGXI] Longsheng County (Huaping National NR): 1 male, 25.V.2007, Liu-Sheng Chen & G.Y. Wu leg. (SCAU); [HAINAN] Lingshui County (Diaoluoshan National NR): 1 male, 24.IV.2004, Guo-Hua Huang leg. (SCAU); [SHAANXI] Fopin County (Mts. Qinling, 33°35'N, 108°01'E, 1800 m): 3 males, August 2005, Siniaev & his team leg. (MWM); 1 male, IX.2005, Siniaev & his team leg. (MWM); [SICHUAN] Wenchuan County (Wolong National NR): 2 males, 31°09'N, 103°20'E, May 2005, Sinjaev & his team leg. (MWM); Dujiangyan City: 2 males, Mt. Qingchenghoushan, 70 km northwest of Chengdu, 1400 m, 21–25.VIII.2005, M. Murzin leg. (MWM); Luding County: 1 male, Mts. Daxueshan, Mt. Gonggashan, northwest of Moxi, 29°41'N, 101°58'E, 14–19.VII.1999, Sinjaev & Plutenko leg. (MWM).

Bionomics. The type series came from montane forests at altitudes of 1300–2600 m, but most common between 1500–1800 m (Zolotuhin & Wang, 2013). There it appears from late April to early September, with 1–2 generation(s) per year depending on altitude. Lowland populations (in Hunan, Guangdong, Hainan) have two generations per year and moths fly from May to August (Plate 8C).

Distribution. Mainland China (Jiangxi, Hubei, Hunan, Guangdong, Guangxi, Shaanxi, Sichuan) and Hainan.

Remarks. The lowland populations of Guangdong Province may represent a separate subspecies but such status needs special investigation. The species is seemingly a mountain inhabitant.

37. *Oberthueria lunwan* Zolotuhin & Wang, X., 2013 (FIGURES 21H, 22D)

Oberthueria lunwan Zolotuhin & Wang, X., 2013, *Zootaxa* 3693 (4): 475. TL: “Yunlong county, Fengshuining Mts., 2460 m, 13 km north of Caojian town, 10–20.V.1999, 25°46'N, 99°06'E”.

Diagnosis. The sister species of *O. formosibia*, which it strongly resembles in general appearance. However, *O. lunwan* is more yellowish with a less contrasting wing pattern and, uniquely in the genus, almost symmetrical valvae.

Specimens examined. [YUNNAN] Dali Bai Autonomous Prefecture: 1 male, Holotype, Yunlong county, Fengshuining Mts., 2460 m, 13 km north of Caojian town, 10–20.V.1999, 25°46'N, 99°06'E, Dr. R. Brechlin leg. (MWM); Paratypes: 1 male, same data as holotype (MWM); Tenchong County: 1 male, Gaoligong Mt, Tenchong, 3000 m, June 1999, Wang & Li leg. (MWM); 1 male, Lijiang/Zhongdian, 27°29' N, 99°53' E, 24–25.V.2012, 3200 m, Floriani leg. (A. Floriani collection, Milan, Italy).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Yunnan), northeastern Myanmar.

Remarks. This is a high montane species known from altitudes of 1600–3200 m, and only collected in May and June (Zolotuhin & Wang, 2013). However, it probably has a second generation in August. Moths were collected in deep mountain valleys in strongly degraded and therefore sparse secondary forest.

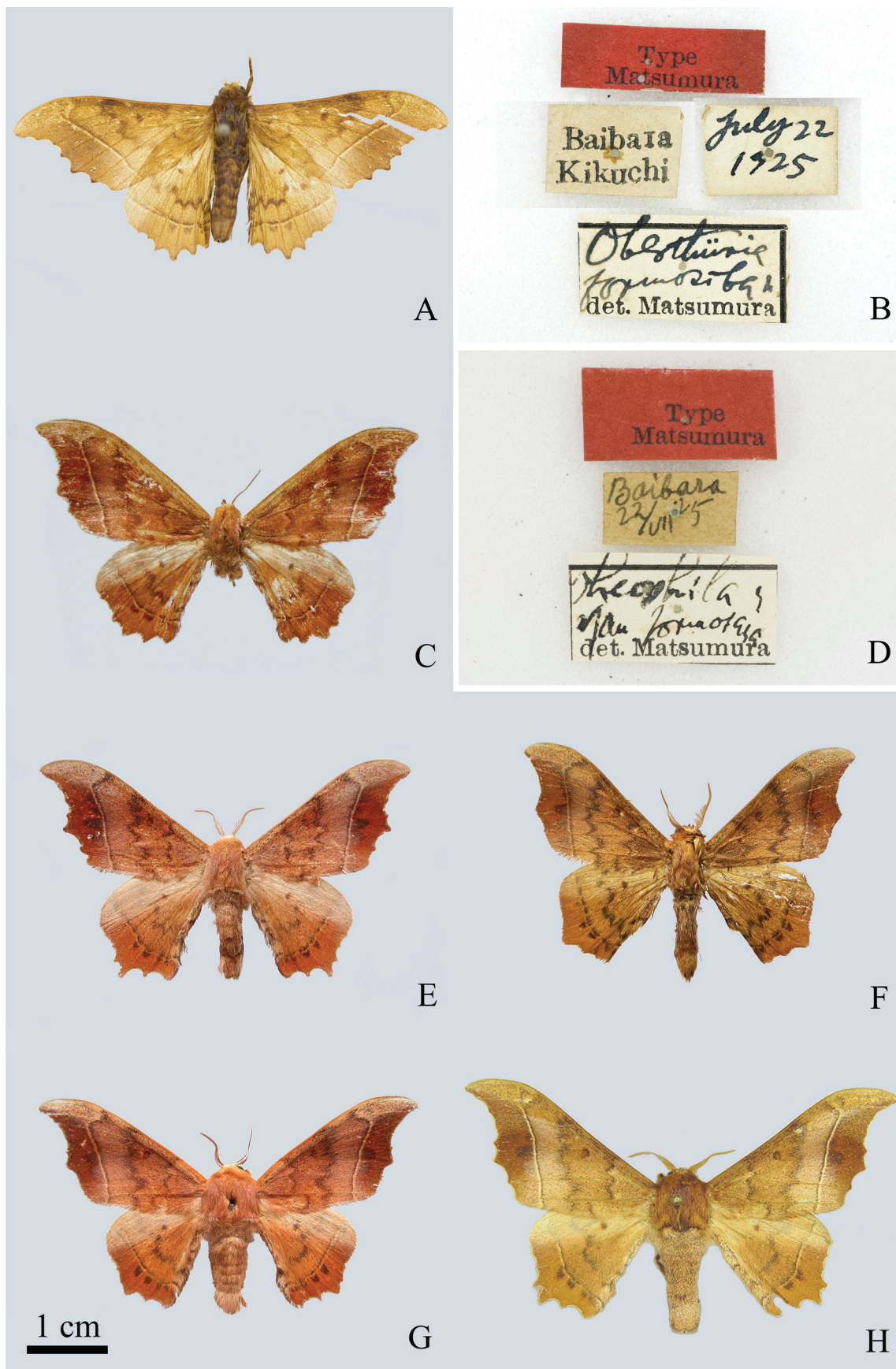


FIGURE 21. Adults and labels of *Oberthueria* spp. A–B. *O. formosibia*, male (Taiwan), type; C–D. *O. formosibia*, male (Taiwan), type?; E. *O. caeca*, male (Sichuan); F. *O. yandu*, male (Henan); G. *O. jiatongae*, male (Guangdong); H. *O. lunwan*, male (Yunnan), holotype.

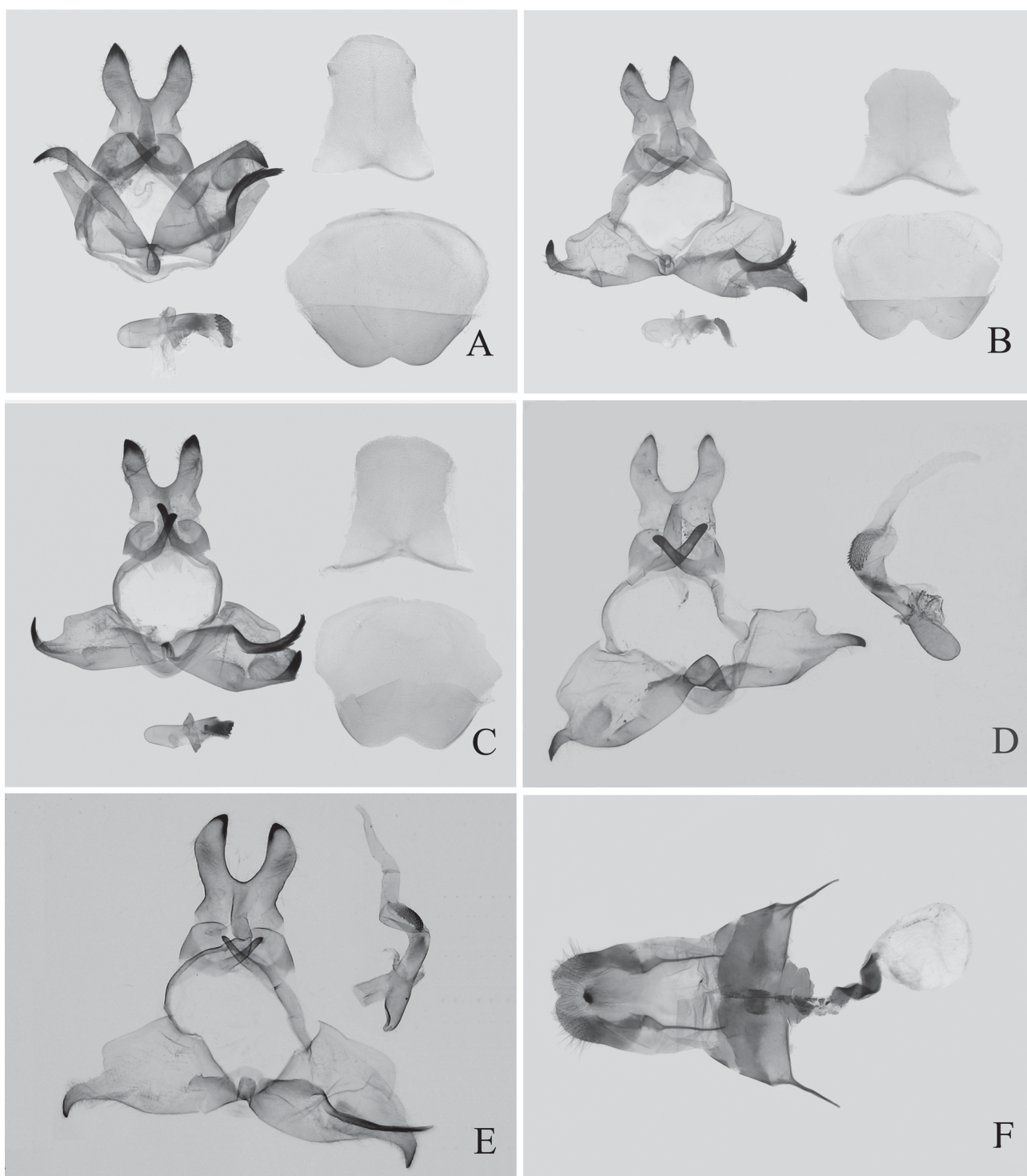


FIGURE 22. Genitalia of *Oberthueria* spp. A. *O. caeca*, male (Sichuan); B. *O. yandu*, male (Henan); C. *O. jiatongae*, male (Guangdong); D. *O. lunwan*, male (Yunnan), holotype; E. *O. formosibia*, female (Taiwan).

XV. *Andraca* Walker, 1865 (FIGURES 23–25)

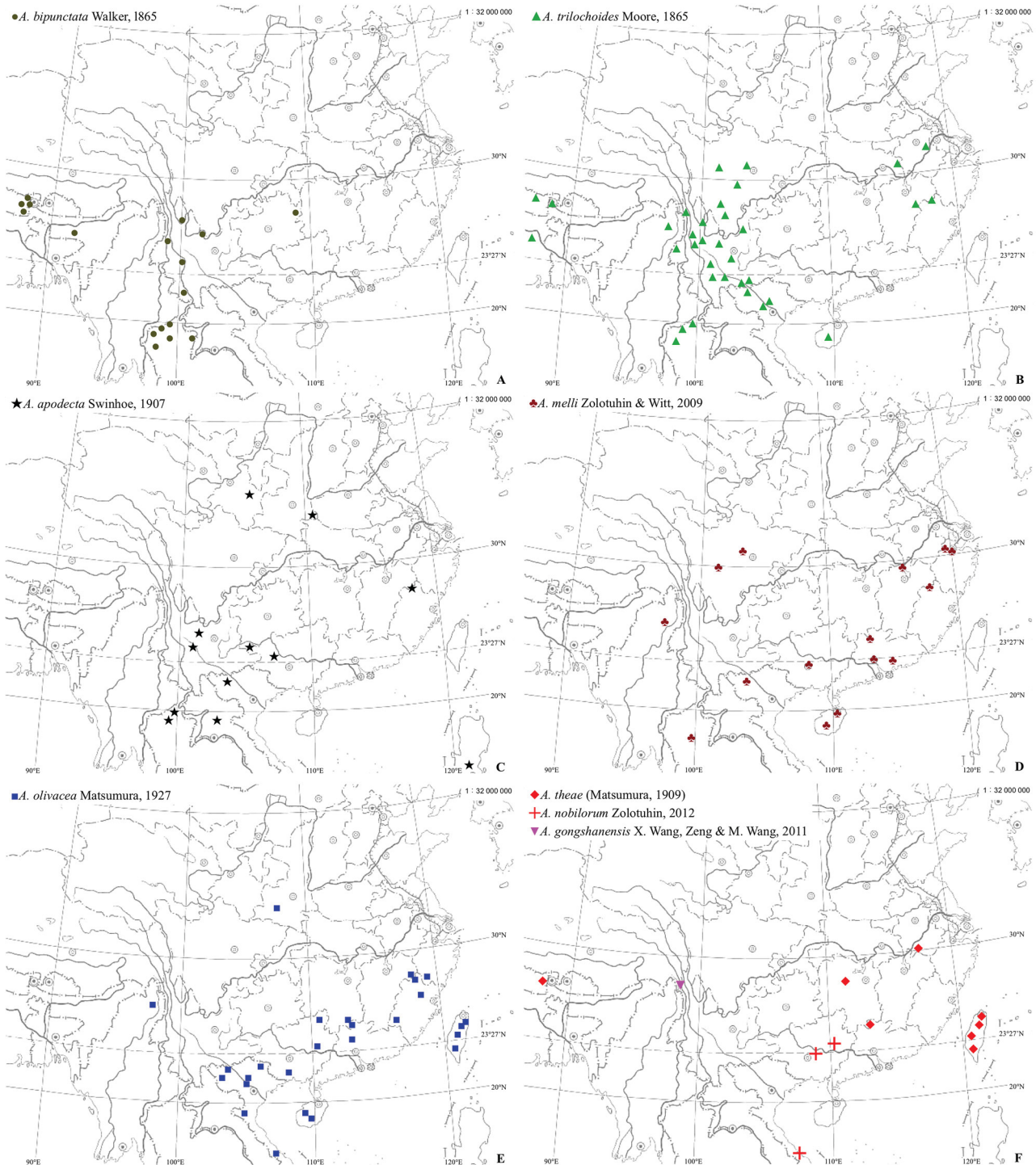
Andraca Walker, 1865, *List Specimens lepid. Insects Colln Br. Mus.* 32: 581. Type species: *Andraca bipunctata* Walker, 1865, by monotypy.

Pseudoeupterote Shiraki, 1911, *Catalogue Insectorum Noxiorum Formosarum*: 48. Type species: *Oreta theae* Matsumura, 1909, by monotypy.

Diagnosis. Charactered by the following features: forewing weakly falcate; female antennae filiform; uncus apically pointed to weakly indented; gnathos with two long and upcurved arms; valva basally broad and sclerotized; aedeagus short; vesica with or without cornuti.

Distribution. Oriental and S & E Palaearctic Regions.

Remarks. Further information on this genus is given by Wang *et al.* (2011), Zolotuhin (2012) and Wang *et al.* (2012). Eight *Andraca* species have so far been recorded from China (Map 15).



Map 15. Distribution of *Andraca* spp. mainly in China.

Key to the species of *Andraca* in China

1. Hindwing outer margin strongly serrate *A. bipunctata*
- Hindwing outer margin even 2
2. Forewing light yellow, with a large basal black spot *A. nobilorum*
- Forewing another color, without a large basal black spot. 3
3. Valva apically bifid *A. theae*
- Valva not apically 4
4. Valva with small, subapical protuberances 5
- Valva without small subapical protuberances 7
5. Valva apex broad and rounded-truncate, a second small subapical protuberance on costa *A. trilochoides*
- Valva apex narrow, acute or truncate, lacking a second small subapical protuberance on costa 6
6. Valva apex bluntly pointed *A. apodecta*
- Valva apex truncate *A. melli*
7. Valva apex blunt. *A. olivacea*
- Valva apex truncate *A. gongshanensis*

38. *Andraca bipunctata* Walker, 1865 (FIGURES 23A–C, 25A)

Andraca bipunctata Walker, 1865, *List Specimens lepid. Insects Colln Br. Mus.* 32: 582. TL: “Hindustan” [India]. Lectotype: male (ZMHU).

Andraca bipunctata Walker, 1862: Chu & Wang, 1993, *Sinozoologia* 10: 241.

Diagnosis. This dark-coloured species can be identified by the serrate outer margins of the fore- and hindwings, more strongly developed in the male than the female.

Specimens examined. [SICHUAN] Panzhihua City: 1 male, Mt. Daheishan, 2500 m, September 2002, Ying *et al.* leg. via P. Kautt, IB 02+ Jan. 03, W.A. Nässig collection (MWM); [GUIZHOU] Jiangkou County: 1 male, Mt. Fanjingshan, 1600 m, August 2002, Li *et al.* leg. via Peter Kautt (MWM); [YUNNAN] Yunxian County: 1 male, Mt. Dabingshan, 1800 m, May 2000, native collector leg. (MWM); 6 males, N-Changyuan village, Guokandashan, September 1999, Wang & Li leg. (MWM); Lancang County: 2 males and 6 females, Mt. Fuli, 2900 m, September 1999, Wang & Li leg. (MWM); Baoshan County: 1 male, Mt. Gaoligongshan, 4000 m, February 2001, local collector leg. via P. Kautt, IB 02 + Jan. 03, W.A. Nässig collection (MWM); Yunlong County: 1 female, Mt. Wubaoshan, 3500 m, May to June 2000, native collector leg. (MWM).

Bionomics. Adults appear from late August to February in China and Thailand, and from June to July or October to December in Nepal and India. Pupation takes place in a thin cocoon of brown silk spun among leaves (Holloway, 1987).

Distribution. Mainland China (Guizhou, Sichuan, Yunnan), Myanmar, northern Thailand, northern India, Nepal.

Remarks. The species is apparently endemic to the southern Himalaya. Robinson *et al.* (2010) reported the host plant as *Camellia sinensis* (L.) O. Ktze., 1887 (Theaceae) and *Symplocos* spp. (Symplocaceae) in India.

39. *Andraca theae* (Matsumura, 1909) (FIGURES 24C, 25B)

Oreta theae Matsumura, 1909, *Thousand Insects of Japan* 1: 134, pl. 13, fig. 10. TL: Formosa (=Taiwan).

Diagnosis. Characterized by the dark red ochre wings with simple pattern, triangular uncus with a narrowly spatulate apex, an apically bifurcate valva, and a curved aedeagus with dense apical spines.

Specimens examined. [TAIWAN] Taipei City: 2 males, 15.VIII.2009, Shipher Wu leg. (HUNAU); Nantou County: 3 males, Mt. Shishan, 2450 m, 13.V.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 3 males, Meifeng, 2100 m, 14.II.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 female, Shishan, 2450 m, 7.VII.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Tatajia, 2610 m, 12.V.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 6.II.2013, Shipher Wu leg. (TFRI); Hualien County (Guanyuan, 2400 m): 1 male, 18.VII.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, 13.VIII.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, 16.IV.2013, Shipher Wu leg. (TFRI); Miaoli County: 2 males, Guanwu, 2000 m, 29.IV.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); Chiayi County: 1 male, Alishan, 2200 m, 7.VII.2011,

Shipher Wu & Wei-Chun Chang leg. (TFRI); 88 males and 8 females from different counties of Taiwan (Taitung, Kaoshiung, Nantou, Hualien, Miaoli, Taipei, Chia) (MWM); [ANHUI] Huangshan City: 3 males, Houxi Town, 28.VI.2010, larvae collected in the field and reared to adults by Dr. Guo-Hua Huang (HUNAU); [HUNAN] Taoyuan County (Wuyunjie National NR): 10 males, 2.VII.2010, larvae collected in the field by Hong-Chun Zhou and reared to adults the Entomological Laboratory of HUNAU by Dr. Guo-Hua Huang (HUNAU); [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, 29.III.2003, Guo-Hua Huang leg. (SCAU); 1 male, 12.VIII.2003, Guo-Hua Huang & De-Yu Xin leg. (HUNAU).

Bionomics. The larval host plants consist of *Camellia sinensis* (L.) O. Ktze., 1887= *Thea sinensis* Linn., 1753, *Camellia* spp., *Cleyera ochracea* DC., *Eurya japonica* Thunb. 1783 (all Theaceae) and *Melastoma candidum* D. Don, 1823 (Melastomataceae) (Sonan, 1937). Adults appear from February to August in lower or upper montane forests at elevations of 400–2900 m in Taiwan (Lin, 2005) (Plate 8D–8E), although it is most common between 1850 and 2700 m. The eggs are laid on the surfaces of the leaves of the hosts, and the larvae live gregariously (Plate 8F–8G).

Distribution. Mainland China (Anhui, Hunan, Guangdong) and Taiwan, Nepal.

Remarks. Caterpillars in Taiwan were photographed by Wang (1995) and Lin (2005), and on Mainland China by Wang *et al.* (2011). More details are given by Zolotuhin (2012) & Wang *et al.* (2012).

40. *Andraca apodecta* Swinhoe, 1907 (FIGURES 24A–24B, 25C)

Andraca apodecta Swinhoe, 1907, *Ann. Mag. nat. Hist.* 19 (7): 49. TL: “Padang, W. Sumatra”. Lectotype: male (BMNH) [examined]

Andraca apodecta Swinhoe: Holloway, 1976, *Malayan Nature Society*: 85; Zolotuhin & Witt, 2009, *Entomofauna* (Suppl. 16): 261.

Diagnosis. The species is characterized by yellowish-brown wings with pale red ochre and a darker obscure lines and fasciae, and the valva strongly constricted in the apical half.

Specimens examined. [JIANGXI] Qianshan County: 1 female, Jiangxi/Fujian border, Mt. Wuyishan, Zixi town, 1430 m, August 2000, native collector leg. (MWM); [GUANGXI] Longlin County: 2 males and 1 female, Mt. Jinzhongshan, 31.VII.2007, Liu-Sheng Chen leg. (SCAU); [SHAANXI] Shangnan County: 1 male, Yuhuangding, 1500 m, August 2000, native collector leg. (MWM); [YUNNAN] Yao’an County: 1 male, Mt. Sanfengshan, 2200 m, July 2000, native collector leg. (MWM).

Bionomics. *Camellia* spp. and *Camellia sinensis* (L.) O. Ktze., 1887= *Thea sinensis* Linn., 1753 have been listed as larval host plants (Roepke, 1924; Owada *et al.*, 2002).

Distribution. Mainland China (Jiangxi-Fujian border, Guangxi, Shaanxi, Yunnan), Philippines, Indonesia (Borneo, Sumatra, Java, Sulawesi), Vietnam, Laos, Thailand.

Remarks. The species has only a single generation per year in many areas, but can be found throughout the year on the tropical islands.

41. *Andraca olivacea* Matsumura, 1927 (FIGURES 23D–23H, 25D)

Andraca olivacea Matsumura, 1927, *J. Coll. Agric. Hokkaido Univ.* 19: 50, pl. 3, fig. 7. TL: “Formosa (=Taiwan), Horisha, Baibara”. Holotype (by monotypy): male (HUM) [examined].

Andraca olivacea olivacens Mell, 1958: *Andraca olivacens* Mell, 1958, *D. entomol. Z. (N.F.)* 5: 211. TL: [China, Fujian] Kuatun, NW Fukien. Lectotype: male (ZFMK) [examined].

Andraca hedra Chu & Wang, 1993, *Sinozoologia* 10: 243, fig. 28, pl. 2, fig. 28. TL: China, Hainan, Jiannfeng. Holotype (by original designation): male (IZAS) [examined].

Pseudandraca ravida Yang, 1995, *Insects of Baishanzu Mountain*: 354, figs 2, 7. TL: [China] Zhejiang Prov., Mt. Baishanzu, 550 m. Holotype: male (said in the original description to be in collection of the Beijing Agricultural University but has not been found there [Prof. Xin-Li Wang, pers. comm.]).

Diagnosis. This species is characterized by greyish-olive wings with distinct dark transverse lines (though with some variation, see Figs 23D, F, G) and a valva that is broad basally and strongly constricted in the apical half, with long stout setae.

Specimens examined. Yilan County (Fushan Botanical Garden, 750 m): 1 male, 25.II.2010, Shipher Wu leg. (TFRI); 1 male, 23.IV.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 2 females, 10.VI.2010, Shipher Wu & Wei-Chun Chang leg. (TFRI); New Taipei City: 1 male, Fushan, 310 m, Wulai, 2.X.2010, Shipher Wu & Wei-Chun Chang leg. (TFRI); Hsinchu County: 1 male, Yulao, 1400 m, 28.VI.2014, Chung-Guan Lai leg. (TFRI); 53 males from different counties of Taiwan (Taitung, Taiching, Taoyuan, Taipei, Pingtung, Ilan) (MWM); [JIANGXI] Guixi County (Yingtian City, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E): 30 males, June 2003, Siniaev & his team leg. (MWM); 8 males, August 2004, Siniaev & his team leg. (MWM); Yingtian City (Mt. Wuyishan, Jiangxi-Fujian border, 50 km southeast of Yingtian, 1600 m, 27°55'N, 117°25'E): 20 males, March 2002, Siniaev & local collector leg. (MWM); [FUJIAN] Longyan County: 3 males, Mt. Daimaoshan, 60 km northwest of Longyan, 1300 m, 25°32'N, 116°51'E, April 2005, Siniaev & his team leg. (MWM); [GUANGDONG] Yingde County (Shimentai National NR): 1 male, 24.VII.2001, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 22.IX.2001, Min Wang leg. (SCAU); 3 males, 11.VI.2002, Guo-Hua Huang leg. (SCAU); Ruyuan County (Nanling National NR): 1 male, 23.VII.2002, Guo-Hua Huang leg. (SCAU); 4 males, 29–31.III.2003, Min Wang leg. (SCAU); 1 male, 22.VI.2003, Min Wang leg. (SCAU); 2 males, 7.VIII.2003, Min Wang leg. (SCAU); 2 males, 18.VIII.2003, Min Wang leg. (SCAU); 5 males, 23.IV.2004, Min Wang leg. (SCAU); 1 female, 24.IV.2004, Min Wang leg. (SCAU); 2 males, 18.IX.2006, Liu-Sheng Chen leg. (SCAU); 2 males, 7.VI.2008, Min Wang leg. (SCAU); 1 male, 1.IV.2009, Hou-Shuai Wang leg. (SCAU); 2 males, 10.VIII.2009, Min Wang leg. (SCAU); 1 male, 1.IV.2009, Xing Wang leg. (HUNAU); [GUANGXI] Jinxiu County (Dayaoshan National NR, 100 km southeast of Liuzhou, 1200 m, 23°45'N, 109°45'E): 12 males, 15–30.III.2004, Siniaev & his team leg. (MWM); 8 males and 3 females, April 2004, Siniaev & his team leg. (MWM); Fangchenggang City (Shiwandashan National NR): 2 males, Mts. Shiwandashan, 30 km southwest of Nanping town, 900 m, 21°43'N, 107°32'E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); Xing'an County (Mao'ershan National NR): 1 male, 3.III.2003, Min Wang & Guo-Hua Huang leg. (SCAU); [HAINAN] Wuzhishan City (Mts. Wuzhi-Shan, 18°53'N, 109°43'E, 1500 m): 8 males, 20.II–10.IV.2001, local collector leg. (MWM); 8 males, 17.VII–07.VIII.2003, Viktor Sinyaev & his team leg. (MWM); Ledong County (Jianfengling National NR): 6 males, 29–31.XI.2003, Guo-Hua Huang & Min Wang leg. (SCAU); 1 male, 23.X.2007, Min Wang leg. (SCAU); [SHAANXI] Taibai County: 1 male, Mts. Tsinling (Qinling), Mt. Taibaishan, 1900 m, August 2004, 33°55'N, 107°44'E, Siniaev & his team leg. (MWM).

Bionomics. *Ficus benjamina* Linn., 1767 (Moraceae) was reported as the larval host plant for *A. hedra* by Chu & Wang (1996). There are several generations per year. In Taiwan, adults appear from February to October at elevations from 300 to 1400 m (Plate 8H, 9A–9B).

Distribution. Mainland China (Zhejiang, Jiangxi, Fujian, Hunan, Guangdong, Guangxi, Shaanxi), Taiwan and Hainan Islands, Vietnam, Myanmar.

Remarks. This species with lightly variety in appearance is very common species in Southern China. It also be easily identified in error because of the individual variety.

42. *Andraca gongshanensis* Wang, Zeng & Wang, 2011 (FIGURES 24G, 25E)

Andraca gongshanensis Wang, X., Zeng & Wang, M., 2011, *ZooKeys* 127: 36, fig 1E, 2E. TL: China, Yunnan Province, Gongshan Mt. Holotype: male (SCAU) [examined].

Diagnosis. This species is characterized by the darker brownish-gray wings with lighter yellow bands, an apically constricted and truncate valva, and a sacculus lacking a strong subapical protuberance.

Specimens examined. [YUNNAN] Gongshan County (Mt. Gongshan): 1 male, Holotype deposited in SCAU, 22.VII.2006, Min Wang & Xiao-Ling Fan leg.; 2 males, paratypes deposited in SCAU, 21.VII.2006, Min Wang & Xiao-Ling Fan leg.; 1 male, paratype deposited in HUNAU, 23.VII.2006, Min Wang & Xiao-Ling Fan leg.; 2 males, Mt. Gongshan, 20.VII.2013, Min Wang leg. (SCAU).

Bionomics. The adults live in high mountains and fly in summer.

Distribution. Mainland China (Yunnan).

Remarks. The species is endemic to Yunnan Province, with all known specimens collected from only the type locality.

43. *Andraca melli* Zolotuhin & Witt, 2009 (FIGURES 24D, 25F)

Andraca melli Zolotuhin & Witt, 2009, *Entomofauna* Suppl. 16: 262, pl. 2, fig. 14; color pl. 24, figs. 11, 12. TL: “China, Prov. Guangdong, Mahn-tsi-shan”. Holotype: male (ZMHU) [examined].

Andraca bipunctata Walker, 1865; Chu & Wang, 1993: 241, fig. 25, pl. 2, fig. 25; Chu & Wang, 1996: 55, fig. 39, pl. 3, fig. 7.

Diagnosis. This species is a small species characterized by a brownish-green coloration, the bluntly pointed forewing, and a bluntly triangular uncus bearing long hairs.

Specimens examined. [JIANGXI] Yingtan City: 1 female, paratype, Mts. Wuyishan, Jiangxi-Fujian border, 50 km southeast of Yingtan, 1600 m, 27°55'N, 117°25'E, May 2002, Siniaev & local collector leg. (MWM); [GUANGDONG] Ruyuan County (Nanling National NR): 2 males, 23.VI.2007, larvae collected in the field and reared to adults by Liu-Sheng Chen (SCAU); 2 males and 1 female, paratypes, R. Mell leg. (MWM); 1 male, paratype, 40 km west of Guangzhou, 80 m, 23–24.III.1999, G. Müller leg. (MWM); [HAINAN] Wuzhishan City (Mts. Heling, 1000–1800 m): 1 female, paratype, late February to early May 2000, J.L. Li leg. (MWM); 1 male, late February to early May 2000, J.L. Li leg. (MWM); [SICHUAN] Luding County: 1 female, Mts. Gongga-Shan, 2300 m, 29°41'N, 101°58'E, 15.IX–04.X.2005, Siniaev & his team leg. (MWM); Dujiangyan City: 1 male, Mts. Qingcheng, 70 km west of Chengdu, 1360 m, 26–30.VIII.2004, S. Murzin leg. (MWM).

Bionomics. Larvae feed on *Fraxinus pennsylvanica* Marshall, 1785 (Oleaceae), *Camellia sinensis* (L.) O. Ktze., 1887 and *Camellia oleifera* Abel., 1818 (both Theaceae), *Ternstroemia japonica* Thunb., 1794 and *Pentaphylax euryoides* Gardner & Champion, 1849 (both Pentaphylacaceae).

Distribution. Mainland China (Zhejiang, Fujian, Jiangxi, Guangdong, Guangxi, Sichuan) and Hainan, northern Vietnam, northern Thailand, Myanmar.

Remarks. This species is restricted to the Indo-Burmese region.

44. *Andraca nobilorum* Zolotuhin, 2012 (FIGURES 24E, 25G)

Andraca nobilorum Zolotuhin, 2012, *Zootaxa* 3262: 32, figs. 21, 22. TL: “Central Vietnam, Prov. Kon Tum, Distr. Kom Plong, vill. Mang Canh, 1,250 m”. Holotype: male (MWM) [examined].

Andraca nobilorum houtuae Wang, X. & Zolotuhin, 2012, *Florida Entomologist* 95(3): 558. TL: Guangxi, China. Holotype: male (SCAU) [examined].

Diagnosis. Can be distinguished from other *Andraca* species by the light yellow forewing ground color with a large basal black spot, and the broad duck beak-shaped uncus bearing long hairs.

Specimens examined. [GUANGXI] Wuming County (Nanning City, Damingshan National NR, 1200 m): 1 male, Holotype of *Andraca nobilorum houtuae* deposited in SCAU, 9.VIII.2011, Min Wang & Hou-Shuai Wang leg.; 1 male, Paratype of *Andraca nobilorum houtuae* deposited in HUNAU, 9.VIII.2011, Min Wang & Hou-Shuai Wang leg.; Jinxiu County (Dayaoshan National NR, 100 km southeast of Liuzhou, 23°45'N, 109°45'E, 1200 m in altitude): 1 male, paratype, June 2005, Siniaev & his team leg. (MWM); 1 male, August 2005, Siniaev & his team leg. (MWM).

Bionomics. The host and immature stages are unknown. The adults live in mountains and fly in early summer.

Distribution. Mainland China (Guangxi), Central Vietnam.

Remarks. The Guangxi subspecies *houtuae* differs from the nominotypical subspecies in the absence of an indistinct darker spot at the apex of the forewing and the thinner pointed apex of the valve (Wang *et al.*, 2012).

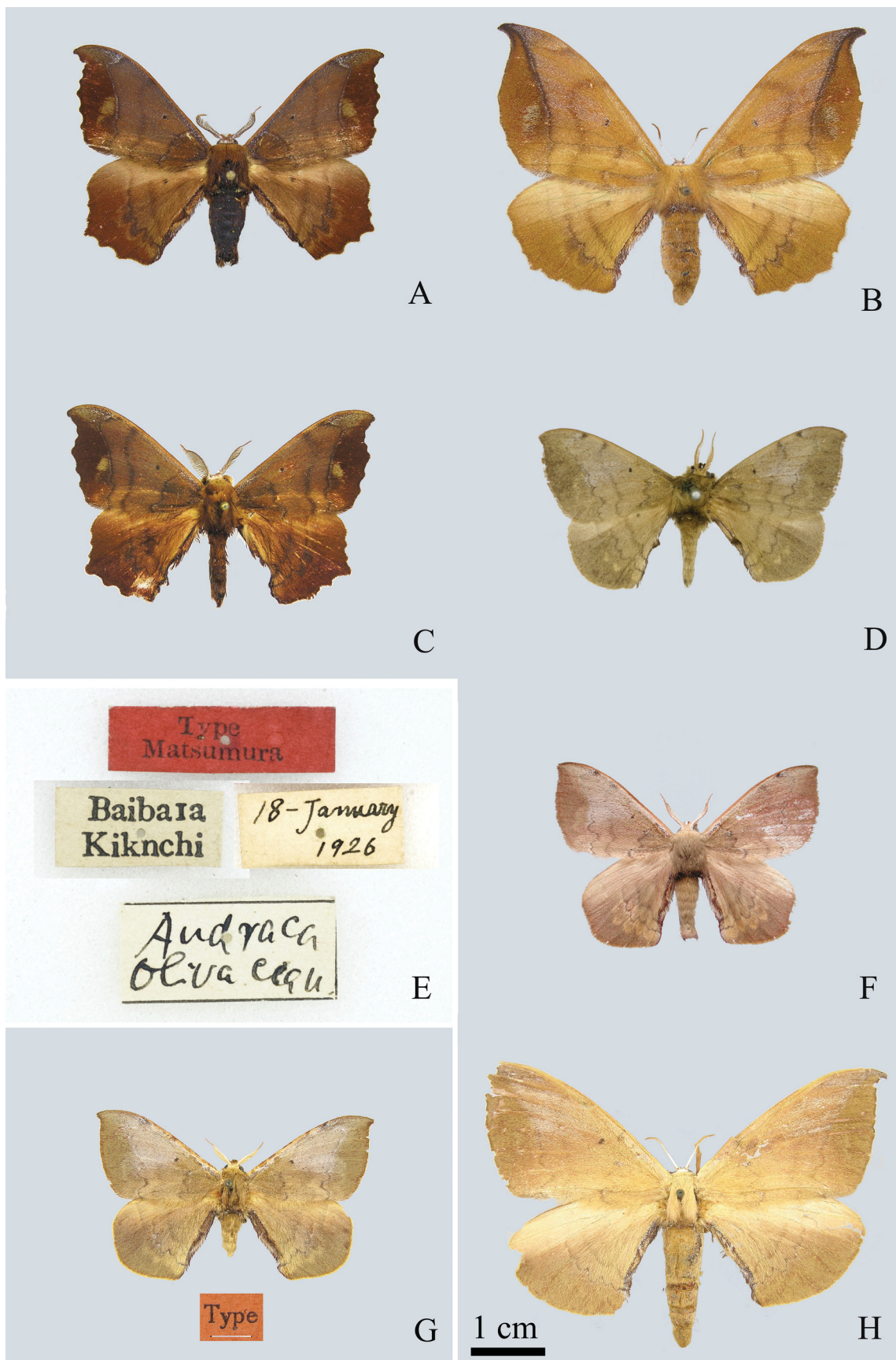


FIGURE 23. Adults and labels of *Andraca* spp. A. *A. bipunctata*, male (Thailand); B. *A. bipunctata*, female (Nepal); C. *A. bipunctata*, male (Yunnan); D–E. *A. olivacea*, male (Taiwan), type; F. *A. olivacea*, male (Guangxi); G. *A. olivacea olivacens*, male (Fujian), lectotype; H. *A. olivacea olivacens*, female (Fujian), paralectotype.

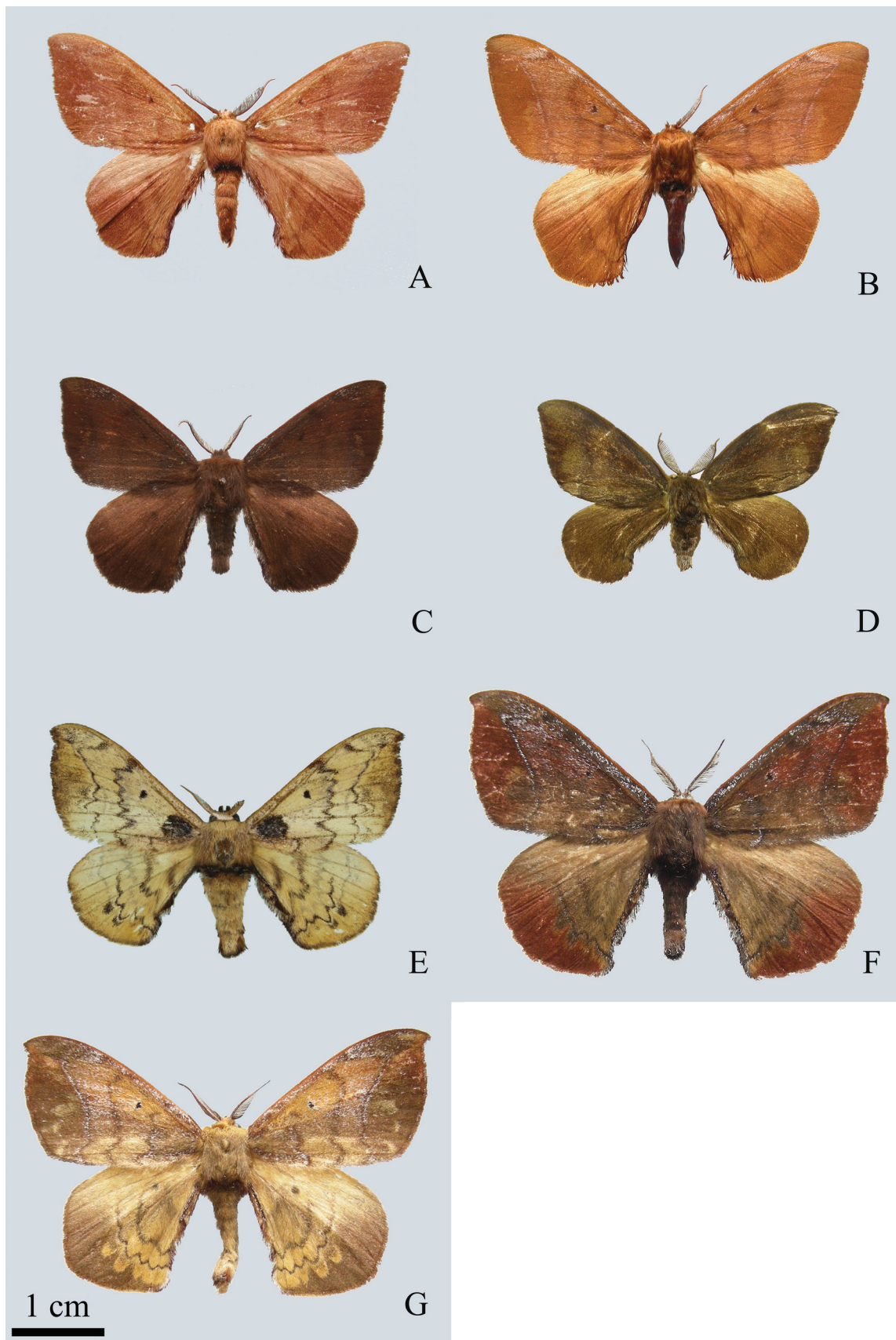


FIGURE 24. Adults of *Andraca* spp. A. *A. apodecta*, male (Guangxi); B. *A. apodecta*, female (Guangxi); C. *A. theae*, male (Hunan); D. *A. melli*, male (Guangdong); E. *A. nobilorum*, male (Guangxi); F. *A. trilochoides*, male (Yunnan); G. *A. gongshanensis*, male (Yunnan), holotype.

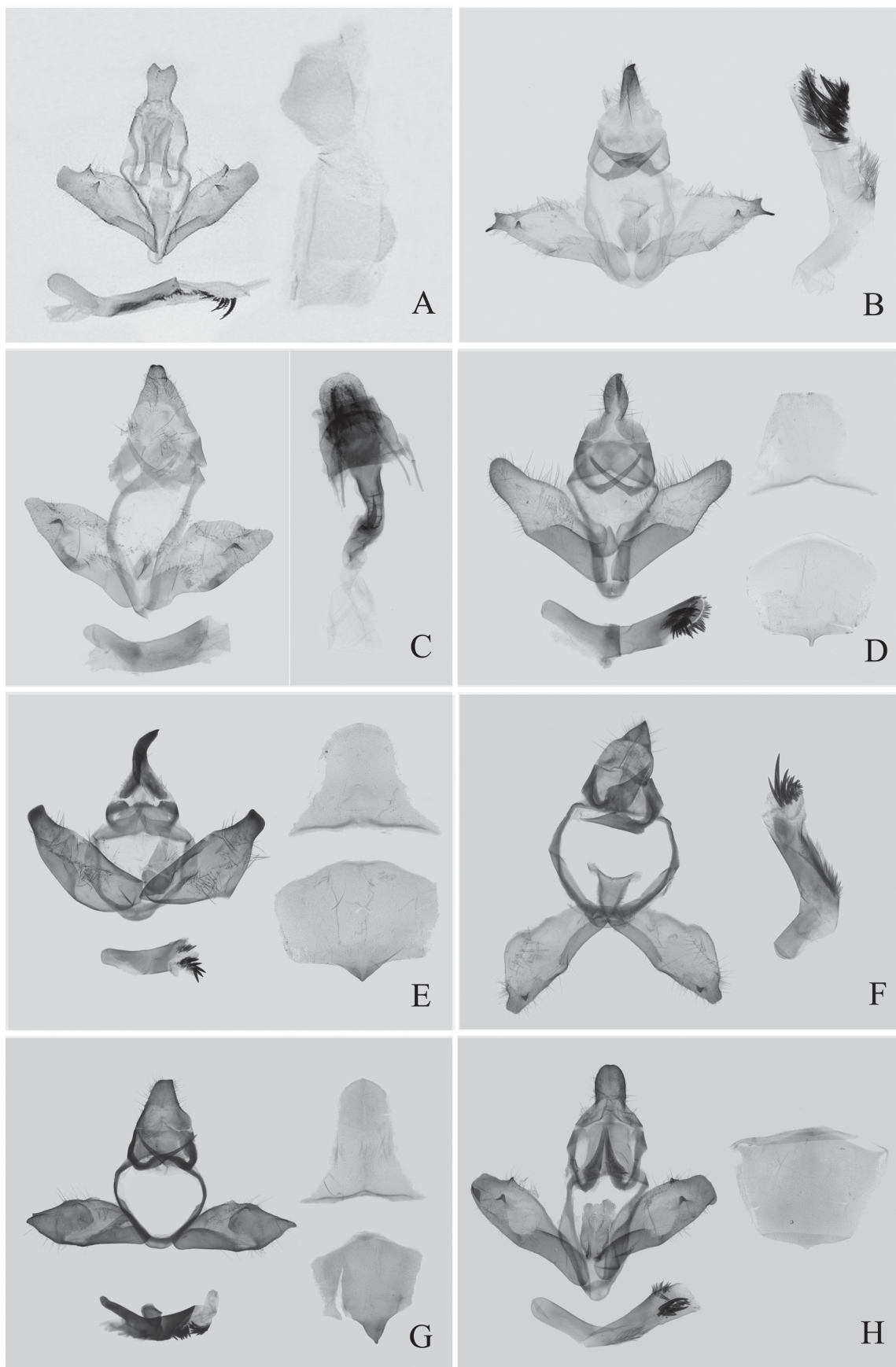


FIGURE 25. Genitalia of *Andraca* spp. A. *A. bipunctata*, male (India); B. *A. theae*, male (Hunan); C. *A. apodecta*, (left, male (Guangxi); right, female (Guangxi)); D. *A. olivacea*, male (Guangdong); E. *A. gongshanensis*, male (Yunnan), holotype; F. *A. melli*, male (Guangdong); G. *A. nobilorum*, male (Guangxi); H. *A. trilochoides*, male (Yunnan).

45. *Andraca trilochoides* Moore, 1865 (FIGURES 24F, 25H)

Andraca trilochoides Moore, 1865, *Proc. Zool. Soc. London* **33**: 820. TL: [India] “Darjeeling”.

Andraca trilochoides roepkei Bryk, 1944

Andraca roepkei Bryk, 1944, *Ark. Zool.* 35A 8: 17, pl. 3, fig. 22 (not 21, as given in the text). TL: “N. E. Burma, Kambaiti, 2,000 m”. Lectotype: male (NRMS) [examined].

Andraca henosa Chu & Wang, 1993, *Sinozoologia* 10: 242, fig. 26, pl. 2, fig. 26. TL: “China, Yunnan, Yongshan”. Holotype (by original designation): male (IZAS) [not examined].

Andraca bipunctata Walker, 1865; Chu & Wang (1993); Wang *et al.* (2011).

Diagnosis. Characterized by the dark reddish-yellow wings with entire outer margins. It is somewhat similar to *A. theae*, but the outer edge of the forewing submarginal line is highlighted in white.

Specimens examined. [JIANGXI] Zixi County: 1 male, Jiangxi/Fujian border, Mts. Wuyishan, 1430 m, VIII. 2000, native collector leg. (MWM); [HUBEI] Huanggang City: 1 male, Mt. Tapieh-Shan (Dabie Shan), middle June to August 1999, J. Li leg. (MWM); [HAINAN] Wuzhishan City: 1 female, Mts. Wuzhi-Shan, 18°53'N, 109°43'E, 20.II–10.IV.2001, local collector leg. (MWM); [SICHUAN] Mianning County: 62 males, Mts. Daxue-Shan, 80 km west of Mianning, 2750 m, 28°34'N, 102°00'E, 7–8.VII.1999, Siniaev & Plutenko leg. (MWM); 2 males, Mts. Qionglai-Shan, 1400 m, 31°13'N, 102°23'E, June 2006, Siniaev & his team leg. (MWM); Dechang County: 27 males, Mt. Abulandan-Shan, 27°25'N, 102°06'E, July 2005, Siniaev & his team leg. (MWM); [YUNNAN] Tengchong County (Mt. Gaoligongshan): 2 males, 15.VI.2005, Ming-Yi Tian leg. (SCAU); 1 male, 3000 m, June 1999, Wang & Li leg. (MWM); Gongshan County: 2 males, Dulongjiang Grand Canyon, 21.VII.2006, Min Wang & Xiao-Ling Fan leg. (SCAU); 1 male and 1 female, Mt. Gongshan, 22.VII.2006, Min Wang & Xiao-Ling Fan leg. (SCAU); Dali Bai Autonomous Prefecture (Yunlong County, 13 km north of Caojian town, Mts. Fengshuining, 2460 m): 9 males, 10–23.VI.1999, R. Brechlin leg. (MWM); 17 males and 1 female, 20.V–9.VI.1999, R. Brechlin leg. (MWM); 48 males and 4 females, 25.VII–8.VIII.1999, R. Brechlin leg. (MWM); 5 males, Mt. Diancang Shan, 2200 m, 25°41'N, 100°05'E, 15–30.VII.2004, Siniaev & his team leg. (MWM); Yuanyang County: 1 male, Mt. Baiyanzishan, 2900 m, May 2000, native collector leg. (MWM); Mojiang County: 6 males, Mt. Dajianshan, 2500 m, July 2000, local collector leg. (MWM); Yunlong County: 1 male, Mt. Wubaoshan, 3500 m, May to June 2000, local collector leg. (MWM); Xining County: 1 male, Mt. Daxueguoshan, Zhengyuan side, 3100 m, June 2000, native collector leg. (MWM); Huize County: 2 males, mt. Wumeng Shan, 2200 m, 20 km north of Baoshan village in Huidong County of Sichuan Province, 26°28'N, 104°27'E, 20.IV–5.V.2004, Siniaev & his team leg. (MWM).

Bionomics. The larval hosts are the tea tree, *Camellia sinensis* (L.) O. Ktze., 1887, *C. oleifera* Abel., 1818 and *C. japonica* Linn., 1753 (Theaceae). Adults appear in Vietnam from April to July and again in November, and in China from late April to August.

Distribution. Mainland China (Anhui, Jiangxi-Fujian border, Hubei, Sichuan, Yunnan) and Hainan, Myanmar, northern Vietnam, northern Thailand, Nepal, India.

Remarks. This species is widely distributed in the Sino-Himalayan region.

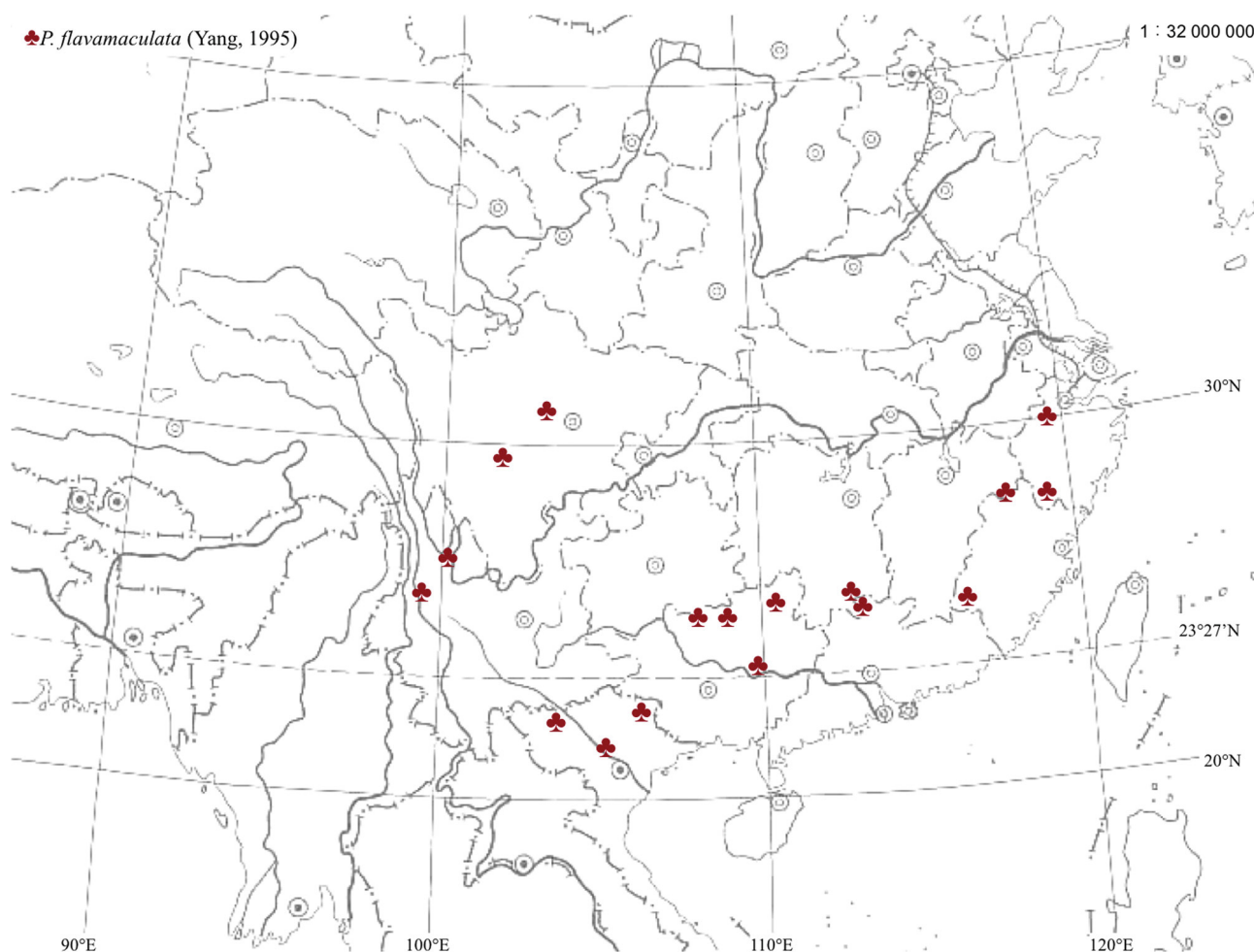
XVI. *Pseudandraca* Miyata, 1970 (FIGURE 26)

Pseudandraca Miyata, 1970, *Tinea* **8**: 190. Type species: *Andraca gracilis* Butler, 1885, by original designation.

Diagnosis. Characterized by the following features: wings dark gray with numerous yellow patches; antemedial, medial and postmedial lines sinuate; discal cell with a black spot; forewing apex acute; uncus finger-shaped, apically pointed; sacculus boot-shaped; saccus short.

Distribution. Japan, China, Vietnam.

Remarks. Two species are included in this genus, the type species endemic to Japan and a second distributed from Vietnam to eastern China (Map 16).



Map 16. Distribution of *Pseudandraca flavamaculata* (Yang, 1995) mainly in China.

46. *Pseudandraca flavamaculata* (Yang, 1995) (FIGURES 26A–26B)

Andraca flavamaculata Yang, 1995, *Insects of Baishanzu mountain, eastern China*: 354, figs. 3, 8. TL: “Zhejiang, China [Mt. Baishanzu, 1100 m]”. Holotype: male (said in the original description to be in collection of the Beijing Agricultural University, but has not been found there.)

Andraca nabesan Kishida & Owada, 2002, *Spec. Bull. Jpn. Soc. Coleopterol.* (5): 464; Huang & Wang, 2004, *Entomotaxonomia* 26(1): 47. TL: “Vietnam, Cao Bang, Cao Bang”. Holotype: male (NSMT) [examined]. Synonymized by Zolotuhin & Witt (2009).

Diagnosis. The species can be distinguished from the other *Pseudandraca* species endemic to Japan based on the external characters that are unique to the Chinese bombycid species by forewing with the contrasting citrus-yellow spots in R-Cu cell especially distinct, and the valva with a strong sharpened basal inner process.

Specimens examined. [ZHEJIANG] Lin’an County (Qingliangfeng NR): 2 males, 26.VII.2011, Xing Wang leg. (HUNAU); [JIANGXI] Guixi County (Yingtian City, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54’N, 117°20’E): 3 males, September 2005, Siniaev & his team leg. (MWM); 1 male, August 2005, Siniaev & his team leg. (MWM); Yingtian City (Mt. Wuyishan, Jiangxi-Fujian border, 50 km southeast of Yingtian, 1600 m, 27°55’N, 117°25’E): 1 male, March 2002, Siniaev & local collector leg. (MWM); [FUJIAN] Longyan County (Mt. Daimaoshan, 60 km northwest of Longyan, 1300 m, 25°32’N, 116°51’E): 3 males, February 2005, Siniaev & his team leg. (MWM); 4 males, April 2005, Siniaev & his team leg. (MWM); [HUNAN] Yizhang County (Mangshan National NR): 3 males, 31.III.2003, Guo-Hua Huang leg. (SCAU); [GUANGDONG] Ruyuan County (Nanling National NR): 2 males, 15.III.2002, Guo-Hua Huang leg. (SCAU); 2 males, 23.II.2003, Guo-Hua

Huang leg. (SCAU); 5 males, 29–31.III.2003, Guo-Hua Huang & Min Wang leg. (SCAU); 1 male, 30.VIII.2003, Guo-Hua Huang leg. (SCAU); 1 male, 17.IX.2006, Zhen Li leg. (SCAU); [GUANGXI] Xing'an County (Mao'ershan National NR): 2 males, 03.III.2003, Min Wang & Guo-Hua Huang leg. (SCAU); Rongshui County (Jiuwandashan National NR): 1 male, 30.VII.2003, Guo-Hua Huang leg. (SCAU); Jingxiu County (Dayaoshan National NR): 21 males, 100 km southeast of Liuzhou, 1200 m, 23°45'N, 109°45'E, April 2004, Siniaev & his team leg. (MWM); [SICHUAN] Dujiangyan County: 1 male, Qingchenghoushan Mts., 70 km northwest of Chengdu, 1400 m, 21–25.VIII.2005, S. Murzin leg. (MWM); Luding County: 2 males, Gonggashan Mts., 2600–3200 m, 29°41'N, 101°58'E, 23.IV–15.V.2001, Siniaev & his team leg. (MWM); [YUNNAN] Dali Bai Autonomous Prefecture (13 km north of Caojian town, Fengshuining Mts., 2460 m): 3 males, 25.VII–8.VIII.1999, R. Brechlin leg. (MWM); 3 males, 20.V–9.VI.1999, R. Brechlin leg. (MWM); Yunlong County (90 km northwest of Dali, 25°50'N, 99°17'E, 2570 m): 1 male, August 1998, local collector leg. (MWM); 6 males, 30.VIII.1998, local collector leg. (MWM).

Bionomics. The larval host is unknown. Adults appear from March to early September at altitudes from 1100 to 3200 m (Plate 9C).

Distribution. Mainland China (Zhejiang, Jiangxi, Fujian, Hunan, Guangdong, Guangxi, Sichuan, Yunnan), Vietnam.

Remarks. The female remains unknown.

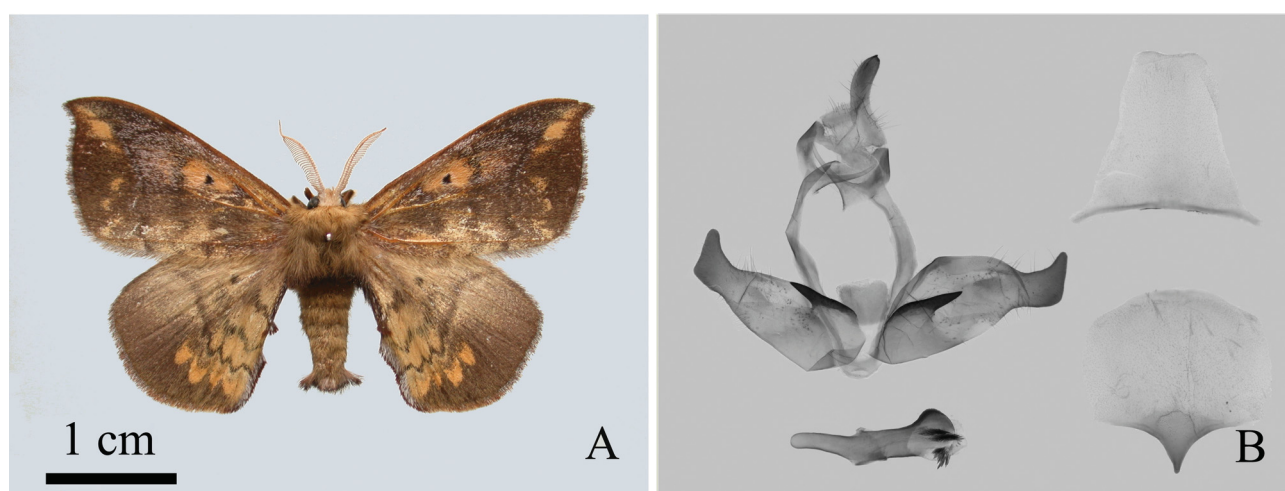


FIGURE 26. Adults and male genitalia of *Pseudandracra flavamaculata* (Yang, 1995). A. Male (Guangxi); B. Male genitalia (Guangdong).

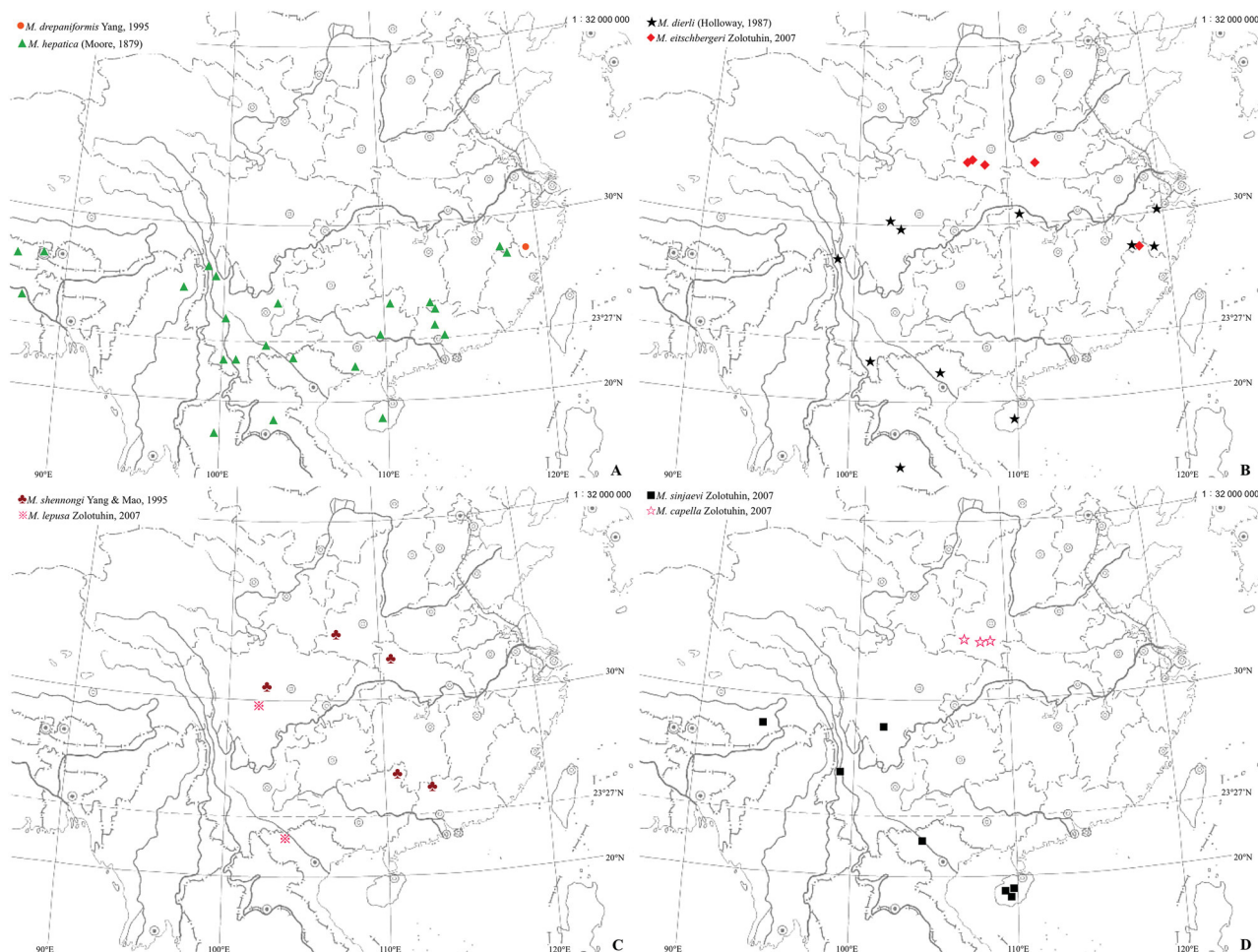
XVII. *Mustilizans* Yang, 1995 (FIGURES 27–29)

Mustilizans Yang, 1995, *Insects of Baishanzu Mountain, Eastern China*: 355. Type species: *Mustilizans drepaniformis* Yang, 1995, by original designation.

Diagnosis. Characterized by the following features: body large and stout; antennae pectinate basally and filiform distally; forewing apex falcate, Rs1 very short, arising from Rs2 and running obliquely to the costa; hindwing with frenulum well-developed; uncus bifid; valva with blunt apex; saccus short and broad; aedeagus sturdy; vesica with numerous thick cornuti. Females are much larger than the males and differ in wing coloration and pattern, most having a reddish-brown ground colour.

Distribution. Sino-Himalayan region.

Remarks. This genus consists of nine species, of which eight are recorded, one for the first time in China (Map 17). Due to the close external similarity of most species, genital dissection is recommended to confirm species identifications.



Map 17. Distribution of *Mustilizans* spp. mainly in China.

Key to the species of *Mustilizans* in China

1. Wings reddish-brown with simple patterning. 2
- Wing by grayish-brown, yellowish or dark brown with complex patterning.. . . . 3
2. Uncus very long, about 1/3 length of genital capsule. *M. drepaniformis*
- Uncus short, about 1/6 length of genital capsule *M. eitschbergeri*
3. Forewing ground colour basad of antemedial darker than that between antemedial line and submarginal line. *M. shennongi*
- Forewing ground colour uniform between antemedial and submarginal lines 4
4. Basal parts of fore- and hindwings gray white, saccus lightly narrower and longer 5
- Basal parts of fore- and hindwings other colors except gray white, saccus broader and shorter 7
5. Forewing submarginal line evenly thick throughout and reaching the apex *M. hepatica*
- Forewing submarginal line thinner above CuA1 than below 6
6. Wing color uniform pale grayish-yellow; forewing submarginal line not extending outwards to reach apex *M. capella*
- Wing color predominantly brown with some pale gray; forewing submarginal line extending outwards to reach apex. *M. sinjaevi*
7. Two lobes of uncus shorter, lightly swollen distally. *M. dierli*
- Two lobes of uncus longer, narrowed distally. *M. lepusa*

47. *Mustilizans drepaniformis* Yang, 1995

Mustilizans drepaniformis Yang, 1995, *Insects of Baishanzu Mountain, Eastern China*: 356. TL: “China, Prov. Zhejiang, Mt. Baishanzu 1600 m”.

Diagnosis. This species was characterized in the original description by a forewing with a hook-shaped apex, concave outer margin edged with ochre, and a discal cell with a small black spot.

Specimens examined. [ZHEJIANG] Qingyuan County (Lishui City): 1 male, holotype, Mt. Baishanzu, 1600 m, 21.VIII.1994, Hong Wu leg. (ZAU); 2 males, paratypes, Mt. Baishanzu, 550 m, 23.IV.1994, Min Lin leg. (ZAU) (Notes: The type specimens are lost (Zolotuhin, 2007), and the data given here are those provided in the original description).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Zhejiang).

Remarks. The type specimens have been lost (Zolotuhin, 2007) and no more specimens have been collected. According to the original description and other *Mustilizans* specimens captured since in the type locality, we consider that the type specimens of *drepaniformis* are probably just variations of *M. hepatica*. However, more information is needed to confirm this suggestion, and so we here continue to treat *drepaniformis* as a valid species.

48. *Mustilizans hepatica* (Moore, 1879) (FIGURES 27A–27C, 29A)

Mustilia hepatica Moore, 1879, *Lep. Coll. late Mr Atkinson*: 82. TL: [Darjeeling, India] “Darjiling”. Holotype: male (ZMHU) [examined].

Mustilia columbaris Butler, 1886, *Proc. Zool. Soc. Lond.* 1886: 387, pl. XXXIV, fig. 7. TL: [India] “Murree”. Holotype: male (BMNH) [examined].

Diagnosis. Characterized by the following features: forewing grayish-cream with hook-shaped apex, antemedial and submarginal lines dividing forewing into two differently colored sections; uncus broad, shallowly bifid, the two lobes short and broadly rounded.

Specimens examined. [JIANGXI] Guixi County (Yingtian City): 4 males, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, June 2003, Siniaev & his team leg. (MWM); Yingtian City: 36 males and 1 female, Jiangxi/Fujian border, 50 km southeast of Yingtian city, 27°56'N, 117°25'E, 1600 m, June 2002, Siniaev & local collectors leg. (MWM); [FUJIAN] Wuyishan City (Wuyishan National NR): 4 males, Jiangxi/Fujian border, 1430 m, August 2000, Inative collector eg. (MWM); [HUNAN] Yizhang County (Mangshan National NR): 20 males and 1 female, 1500 m, Shikengkong Mt., 24°54'N, 112°57'E, 25.IV–1.V.2004, V. Siniaev leg. (MWM); [GUANGDONG] Yingde County (Shimentai National NR): 1 male, 24.VII.2001, Guo-Hua Huang, Min Wang, Xing-Min Wang & Tuo Peng leg. (SCAU); Huizhou County (Nankunshan Provincial NR): 1 male, 18.IV.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); Ruyuan County (Nanling National NR): 5 males, 11.XII.2008, Liu-Sheng Chen & Hou-Shuai Wang leg. (SCAU); 4 males, 9–17.XII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU); [GUANGXI] Xing'an County (Mao'ershan National NR): 1 male, 1.VII.2003, Guo-Hua Huang & Liu-Sheng Chen leg. (SCAU); Shangsi County (Shiwandashan National NR): 5 males, 30 km southwest of Nanping town, 900 m, 21°43'N, 107°32'E, 1–14.IV.2003, Siniaev & local collector leg. (MWM); Jingxiu County (Dayaoshan National NR, 100 km southeast of Liuzhou city, 1200 m, 23°45'N, 109°45'E): 27 males, 15–30.III.2005, Siniaev & his team leg. (MWM); 2 males, August 2005, Siniaev & his team leg. (MWM); [HAINAN] Wuzhishan City (Wuzhishan National NR): 1 male, 18°53'N, 109°43'E, 1500 m, 17.VII–08.VIII.2003, Siniaev & his team leg. (MWM); [YUNNAN] Dali City: 2 males, road from Yunxian to Daxing, 1200 m, 20 km south of Dali city, 16.III–10.IV.2000, 24°30'N, 100°01'E, local collector leg. (MWM); Xishuangbanna Dai Autonomous Prefecture: 17 males, Puwen, 30 km southwest of Simao county, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); 11 males, 18 km south of Simao county, Mt. Mangxiba, 22°28'N, 101°01'E, 26.II–20.III.1999, local collectors leg. (MWM); Fugong County: 5 males, 42 km north of Fugong, 1390 m, Lishadi (=Walo), 27°15'N, 98°55'E, 15–27.X.1999, local collector leg. (MWM); Gejiu City: 2 males, Mt. Lianhuashan, middle of May 2000, native collector leg. (MWM); Malong County: 2 males, Huangcao valley, 2500 m, early June 2000, native collector leg. (MWM); Lancang County: 1 male, Mt. Heishan, 2500 m, September 1999, Wang & Li leg. (MWM).

Bionomics. The known larval host plants are *Quercus incana* W. Bartram., 1791 (Fagaceae) (Robinson *et al.*, 2001) and *Broussonetia papyrifera* (Linn.) L'Hér. ex Vent., 1799 (Moraceae) (Chu & Wang, 1996).

Distribution. Mainland China (Jiangxi, Fujian, Hunan, Guangdong, Guangxi, Yunnan) and Hainan, northern Vietnam, northern Malaysia, Laos, northern Thailand, Sikkim, Nepal, India, Pakistan.

Remarks. This species is widely distributed in the Sino-Himalayan area.

49. *Mustilizans dierli* (Holloway, 1987) (FIGURES 27D–27E, 29B)

Mustilia dierli Holloway, 1987, *Moths of Borneo* 3: 88. TL: [Borneo] “E. Sabah: Brumas”. Holotype: male (BMNH) [examined].

Mustilizans baishanzua Yang, 1995, **syn. nov.** *Insects of Baishanzu Mountain, Eastern China*: 356. TL: “China, Prov. Zhejiang, Mt. Baishanzu 1600 m”.

Mustilizans dierli refugialis Zolotuhin, 2007, *Neue ent. Nachr.*, 60: 196, pl. 00, fig. 36. TL: “China, Yunnan, Simao-district, Mangxi Ba Mts, 18 km S Simao, 1280 m”. Holotype: male (MWM) [examined].

Diagnosis. Very similar to *M. hepatica*, but can be distinguished by the following characters: submarginal line straight, not undulate in basal part; uncus more deeply bifid, the lobes longer and finger-shaped; valve apex narrow and curved; sacculus short and broad.

Specimens examined. [ZHEJIANG] Lin'an County (Qingliangfeng NR): 1 male, 26.VII.2011, Xing Wang & Yuan-Yuan Liu leg. (HUNAU); [JIANGXI] Guixi County (Yingtian City, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E): 1 male, April to June 2004, Siniaev & his team leg. (MWM); 1 male, August 2005, Siniaev & his team leg. (MWM); [HUBEI] Changyang County: 1 male, Wushanglin, July 1998, Li Wen leg. (MWM); [HAINAN] Wuzhishan City (Mt. Wuzhishan, 18°53'N, 109°43'E, 1500 m): 3 males, 17.VII–08.VIII.2003, Siniaev & his team leg. (MWM); 2 males, March 2003, Siniaev & his team leg. (MWM); 17 males (paratypes of *refugialis*), 20.II–10.IV.2001, local collector leg. (MWM); Baoting County: 1 male, 1000–1800 m, early February to early May 2000, S. Li leg. (MWM); [SHAANXI] Dabashan Mountain: 7 males (paratypes of *refugialis*), 1800 m, 15 km S Shou-Man Village, 32°08'N, 108°37'E, 25.V–14.VI.2000, Siniaev & Plutenko leg. (MWM); [SICHUAN] Yingjing County (Mt. Nibashan): 1 male, 14.VII.2009, Min Wang & Yang Long leg. (SCAU); 1 male, 27.VII.2009, Guo-Hua Huang leg. (HUNAU); Baoxing County: 1 male, Ganyanggou, Donglashan Grand Canyon, Longdong Town, 25.VII.2009, Guo-Hua Huang leg. (HUNAU); [YUNNAN] Xishuanbanna Prefecture: 1 male, 50 km north of Jinghong city, Guanping, 1000 m, 9.I–6.II.2003, 22°10'N, 101°02'E, S. Murzin leg. (MWM); 1 male (holotype of the subspecies *M. dierli refugialis*) and 1 male (paratype of *refugialis*), Simao-district, Mangxi Ba Mts, 1280 m, 26.II–20.III.1999, R. Brechlin leg. (Gu 7976, MWM); 10 males (paratypes of *refugialis*), Puwen, 30 km SSW Simao, 900 m, 22°30'N, 100°02'E, 16.III–30.IV.2000, Brechlin's collector (MWM); Deqin County: 1 male, Mt. Meilixueshan, 15.VIII.2002, Ming-Yi Tian leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Zhejiang, Jiangxi, Hubei, Shaanxi, Sichuan, Yunnan) and Hainan, Vietnam, Malaysia, Indonesia, Thailand. The Chinese population is attributed to ssp. *refugialis* by Zolotuhin, (2007) and we used the species name *dierli* to treat with the subspecies name *refugialis* here.

Remarks. This species is widely distributed in Southeast Asia and China. Yang (1995b) described a new species *baishanzua* based on specimens collected from Baishanzu Mountain. Here, we consider that the species *baishanzua* as a new synonymy of the species *dierli* based on the comparing detailly with the original description by Yang (1995b).

50. *Mustilizans eitschbergeri* Zolotuhin, 2007 (FIGURES 27F–27H, 29C)

Mustilizans eitschbergeri Zolotuhin, 2007, *Neue ent. Nachr.*, 60: 197. TL: “China, Prov. Shaanxi, South Tai bai shan, Tsinling Mts, Houzbenzi, 1500 m”. Holotype: male (MWM) [examined].

Diagnosis. Characterized by the reddish brown forewing, obscure antemedial, medial and postmedial lines, straight submarginal line that is curved inwards near the costa, a larger black dot in the discal cell.

Specimens examined. [JIANGXI-FUJIAN] the border, 1 male (paratype), 50 km SE of Yingtian, 27°56'N, 117°25'E, 1600 m, May 2002, V. Sinjaev & local collector leg. (MWM); [HENAN] Luoyang City (Baiyunshan

National Park): 5 males, 14–15.VIII.2008, Guo-Hua Huang, Liu-Sheng Chen & Min Wang leg. (HUNAU); [SHAANXI] Taibai County (Mt. Taibaishan): 1 male (holotype), Houzhenzi Town, 33°53'N, 107°49'E, 1500 m, 05–10.V.2000, V. Sinjaev & E. Plutenko leg. (MWM); 6 males (paratypes), the same data except 1800 m, June 1999, local collector leg. (MWM); 1 male (paratype), the same data except July 2001 (MWM); 3 males (paratypes), the same data except summer 1999 (MWM); 9 males (paratypes), the same data except 1500 m, 5–10.V.2000, V. Sinjaev & E. Plutenko leg. (MWM); 6 males (paratypes), Houzhenzi Town, 33°51'N, 107°49'E, 1600 m, 27.V–8.VI.1999, local collector leg. (MWM); 12 males (paratypes), the same data except 1–12.VIII.1999, R. Brechlin leg. (MWM); 2 males (paratypes), the same data except 1500 m, September 2000, local collector leg. (MWM); 44 males (paratypes), the same data except 33°51'N, 107°57'E, 1500 m, 20.IV–11.V.1999, V. Sinjaev & E. Plutenko leg. (MWM); 3 males (paratypes), the same data except 6–20.IV.1999, V. Sinjaev & E. Plutenko leg. (MWM); 2 males, 1500 m, 33°50'N, 107°41'E, April 2005, Viktor Sinyaev & his team leg. (MWM); Foping County: 1 female, 1600 m, Panda area, Foping NR (MWM); 1 male, Mts. Qinling, 1800 m, 33°35'N, 108°01'E, September 2005, team of Siniaev leg. (MWM); Dabashan Mountain: 1 male (paratype), 32°56'N, 109°25'E, 900–1000 m, 20–24.V.2001, V. Sinjaev & local collector leg. (MWM); Ning Shan: 7 males (paratypes), near Ningshan town, 33°44'N, 108°26'E, 1500 m, June 2001, local collector leg. (MWM); 1 female (paratype), Panda area, Foping NR, 33°45'N, 107°48'E, 1600 m, 6–11.IV.1999, V. Sinjaev & E. Plutenko leg. (MWM); Taibai County: 18 males (paratypes), Taibaishan Mountain, Süd-Shensi, 1700 m, 12–17.V.1936, H. Höne leg. (ZFMK).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Jiangxi, Fujian, Henan, Shaanxi).

Remarks. This species lives mainly in mountain forests from 900 to 1800 m. There are two generations per a year, and adults appear from April to June and in August.

51. *Mustilizans shennongi* Yang & Mao, 1995 (FIGURES 28A, 29D)

Mustilizans shennongi Yang & Mao, 1995, *Journal of Hubei University (Natural Science)* 17 (4): 428. TL: Hubei, China. Holotype: male (CAU) [examined].

Diagnosis. Characterized by forewing with curved inner margin, three yellow spots near the tornus, a wavy antemedial line and a submarginal line edged with yellowish white.

Specimens examined. [GUANGDONG] Ruyuan County (Nanling National NR): 2 males, 18.V.2009, Hou-Shuai Wang leg. (SCAU); [GUANGXI] Xing'an County (Mao'ershan National NR): 1 male, 1.VII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); 2 males, 31.V.2008, Min Wang & Hou-Shuai Wang leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Hubei, Guangdong, Guangxi, Shaanxi, Sichuan).

Remarks. This species is allied to *M. baishanzuna* Yang, which is a synonym of *Mustilizans dierli* based on the original description by Yang (1995b), but can be easily distinguished by the more shallowly bifid uncus and short and broad thumb-shaped sacculus that is folded upwards.

52. *Mustilizans lepusa* Zolotuhin, 2007 (FIGURES 28B, 29E)

Mustilizans lepusa Zolotuhin, 2007, *Neue ent. Nachr.* 60: 198. TL: “Northern Vietnam, Cuc Phuong Nat. Park, 120 km SW Hanoi, 400 m”. Holotype: male (MWM) [examined].

Diagnosis. Characterized by the following features: forewing with antemedial line arched rather than sinuate, forewing coloration divided into two by submarginal line, distal part reddish-yellow, basal part grayish-yellow; valva ventrally broad, short and folded upwards with blunt apex.

Specimens examined. [SICHUAN] Luding County: 1 male, Mt. Gonggashan, 2.III.2003, Min Wang & Liu-Sheng Chen leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Sichuan), Vietnam.

Remarks. This is the first record of this species from China.

53. *Mustilizans sinjaevi* Zolotuhin, 2007 (FIGURES 28C–28D, 29F)

Mustilizans sinjaevi Zolotuhin, 2007, *Neue ent. Nachr.* 60: 198. TL: “Northern Vietnam, Mt. Fan-si-pan, Cha-pa, 2400 m”. Holotype: male (MWM) [examined].

Diagnosis. Characterized by forewing with area distal to submarginal line reddish-yellow or yellow-green, antemedial line wavy, and submarginal line with upper half obscure.

Specimens examined. [SICHUAN] 1 male, road from Decheng to Miyi, 2700 m, 27°02'N, 102°01'E, 29.III.2011, Floxiaomi & A. Saldaltis leg. (MWM); [HAINAN] Ledong County (Jianfengling National NR): 1 male, 29.II.2003, Guo-Hua Huang leg. (SCAU); 2 males, 12.IV.2009, Min Wang & Hou-Shuai Wang leg. (HUNAU); Lingshui County (Diaoluoshan National NR): 8 males, 24.V.2004, Liu-Sheng Chen & Min Wang leg. (SCAU); Baisha County (Yinggeling National NR): 1 male, Daoyin Village, 4.XI.2005, Min Wang & Hou-Shuai Wang leg. (SCAU); [YUNNAN] Dali County: 1 male (paratype), 230 km N. Dali city, 2200 m, 23–27.IV.1998 (MWM); Changyuan County: 1 male (paratype), Guokandashan Mountain, September 1999, local collector leg. (MWM); Yunlong County: 3 males (paratypes), Fengshuining Mountain, 13 km N Caojian, 2460 m, 25°46'N, 99°06'E, 10–20.V.1999, R. Brechlin leg. (MWM); 1 male (paratype), the same data except 20.V–9.VI.1999 (MWM); [XIZANG] 1 male (paratype), Tibet, bridge to Yarlung Tsampo, road Pome-Nyigtri, 2200 m, 30°01'N, 95°00'E, 28.V.2001, G.C. Beckong leg. (ZFMK).

Bionomics. The larval host is unknown.

Distribution. China (Sichuan, Yunnan, Xizang) and Hainan, Vietnam.

Remarks. This species is endemic to the Southeastern Himalaya.

54. *Mustilizans capella* Zolotuhin, 2007 (FIGURES 28E)

Mustilizans capella Zolotuhin, 2007, *Neue ent. Nachr.* 60: 197. TL: “China, Shaanxi prov., Ning Shan, 1500 m, near Ningshan town”. Holotype: male (MWM) [examined].

Diagnosis. Very similar to *M. sinjaevi* but can be distinguished by the following characters: wings pale grayish-yellow; forewing broader with apex less produced.

Specimens examined. [SHAANXI] Ningshan County: 1 male (holotype), 1500 m, near Ningshan town, 33°44'N, 106°26'E, June 2001, local collector leg. (MWM); 3 males (paratypes), the same data; Dabashan Mountain: 19 males (paratypes), 15 km S Shou-Man Village, 1800 m, 32°08'N, 108°37'E, 25.V–14.VI.2000, V. Sinjaev & E. Plutenko leg. (MWM); Fopin County: 2 males, Mt. Qinling, 1800 m, 33°35'N, 108°01'E, August 2005, the team of Siniaev leg. (MWM); 3 males (paratypes), Taibaishan Mountain (S), 33°51'N, 107°57'E, 1500 m, 20.IV–11.V.1999, V. Sinjaev & E. Plutenko leg. (MWM); Taibai County: 8 males (paratypes), Taibaishan Mountain (S), Houzhenzi town, 33°53'N, 107°49'E, 1500–2200 m, May 1999 to June 2001, local collector leg. (MWM); 1 male, Mt. Taibaishan, 1500 m, 33°50'N, 107°41'E, April 2005, Viktor Siniaev & his team leg. (MWM); [SICHUAN] Gonggashan Mountain: 1 male (paratype), 29°41'N, 101°58'E, 2200 m, 25.V–8.VI.2001, V. Sinjaev & local collector leg. (MWM).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Shaanxi).

Remarks. This species is endemic to the Qinling Mountains.

XVIII. *Comparmustilia* Wang, X. & Zolotuhin, gen. nov. (FIGURES 30–32)

Type species: *Mustilia sphingiformis* Moore, 1879, *Proc. Zool. Soc. London*: 407, by present designation.

Diagnosis. Characterized by the following features: uncus bifid, lobes pointed and apically outcurved; a strumae present at the near the apex of valve; posterior margin of 8th sternite with V-shaped invagination; wings strongly falcate, somewhat resembling hawkmoths.

Description. Male. Head brown ochre; basal half of antenna pectinate, distal part filiform; proboscis short.

Thorax. Dark ochre mixed with gray hairs; forewing purplish-brown except for a broad dark brown crescent, on the outer margin; long and narrow, apex strongly produced, outer margin below apex slightly concave; antemedial line arched; medial line obscure; postmedial line straight; submarginal line angled at M_2 , straight either side; hindwing with postmedial and submarginal lines almost straight.

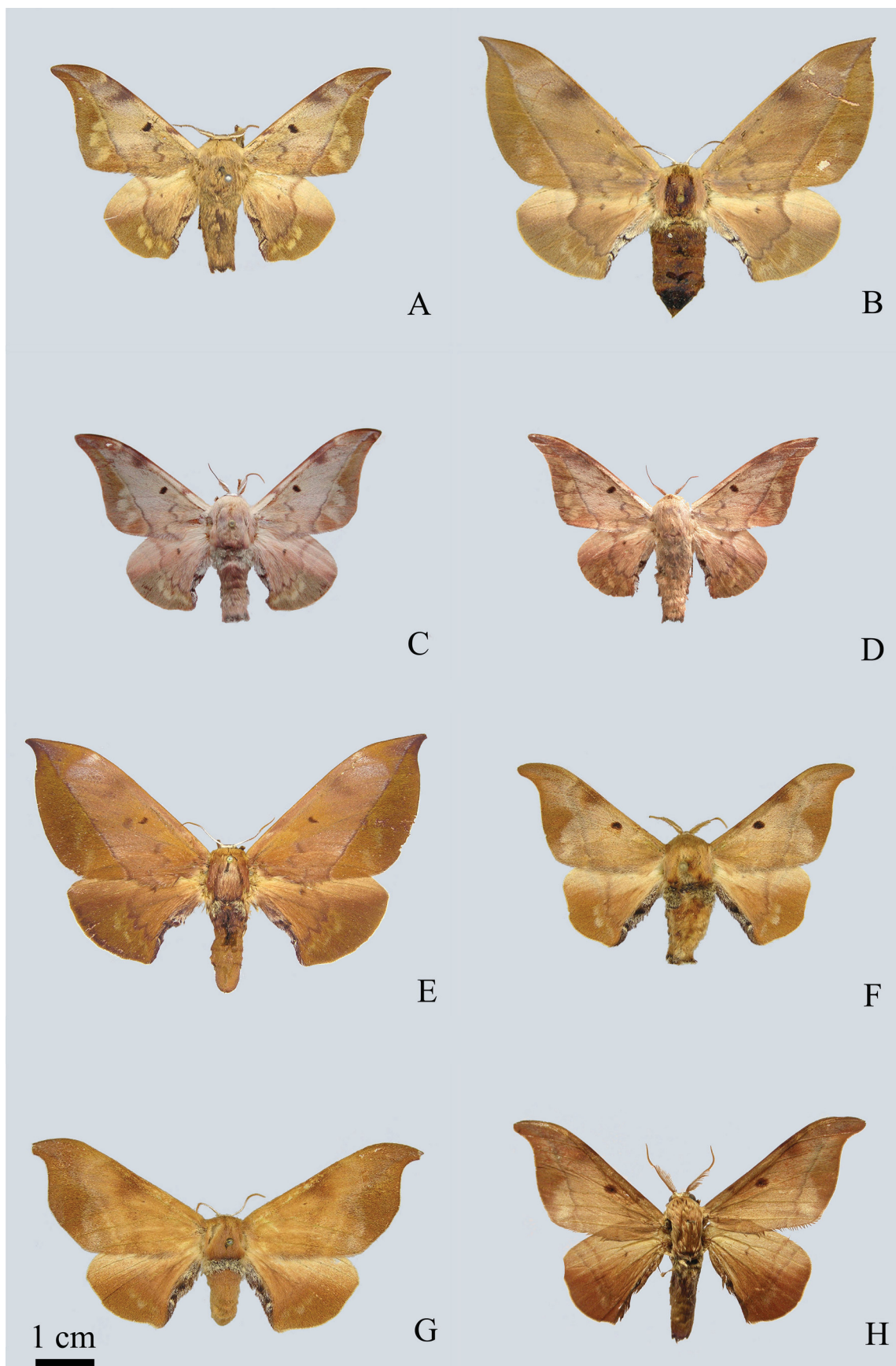


FIGURE 27. Adults of *Mustilizans* spp. A. *M. hepatica*, male (India); B. *M. hepatica*, female (Pakistan); C. *M. hepatica*, male (Guangdong); D. *M. dierli*, male (Yunnan); E. *M. dierli*, female (Myanmar); F. *M. eitschbergeri*, male (Shaanxi), holotype; G. *M. eitschbergeri*, female (Shaanxi), paratype; H. *M. eitschbergeri*, male (Henan).

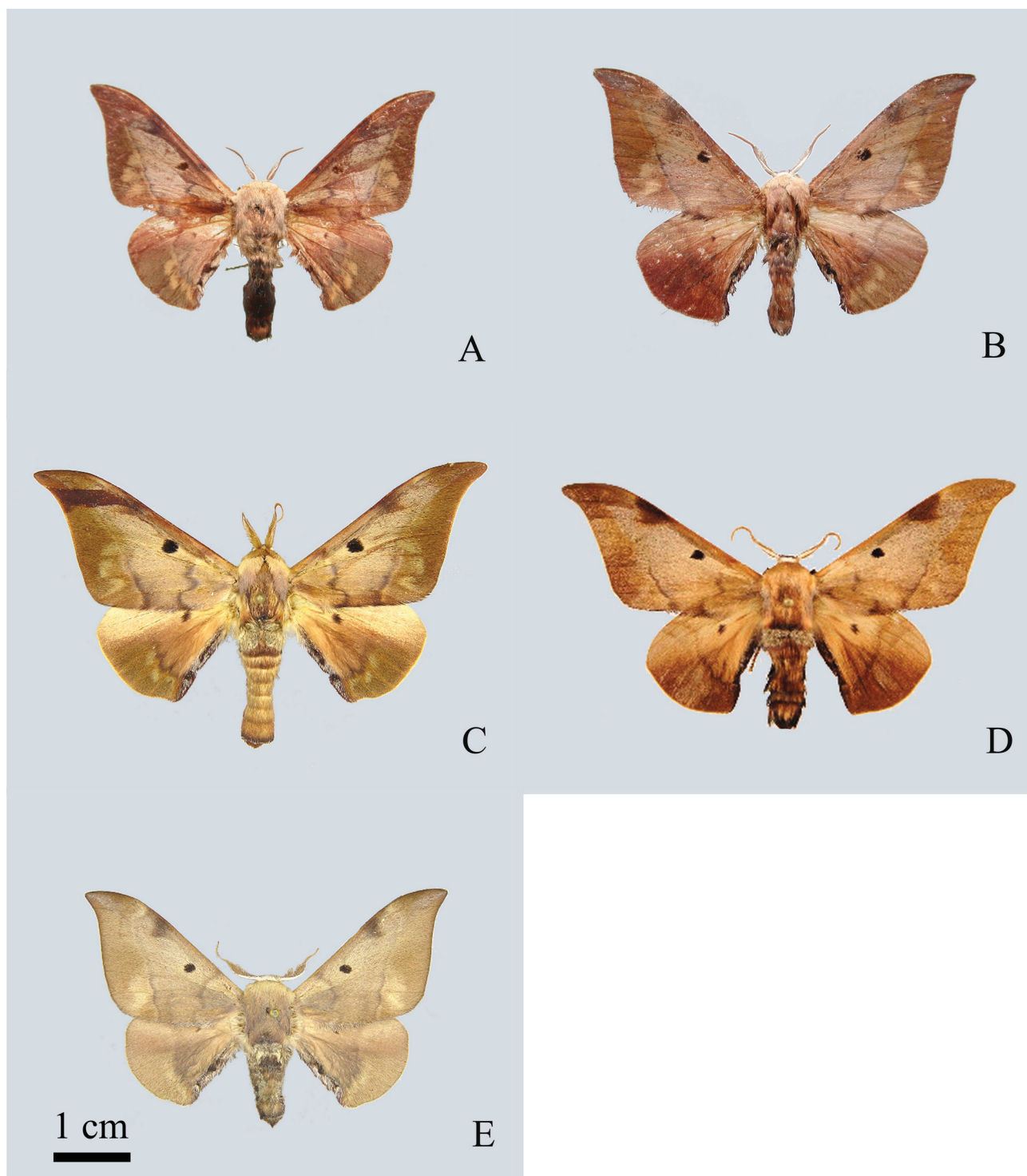


FIGURE 28. Adults of *Mustilizans* spp. A. *M. shennongi*, male (Guangxi); B. *M. lepusa*, male (Sichuan); C. *M. sinjaevi*, male (Vietnam); D. *M. sinjaevi*, male (Sichuan); E. *M. capella*, male (Shaanxi).

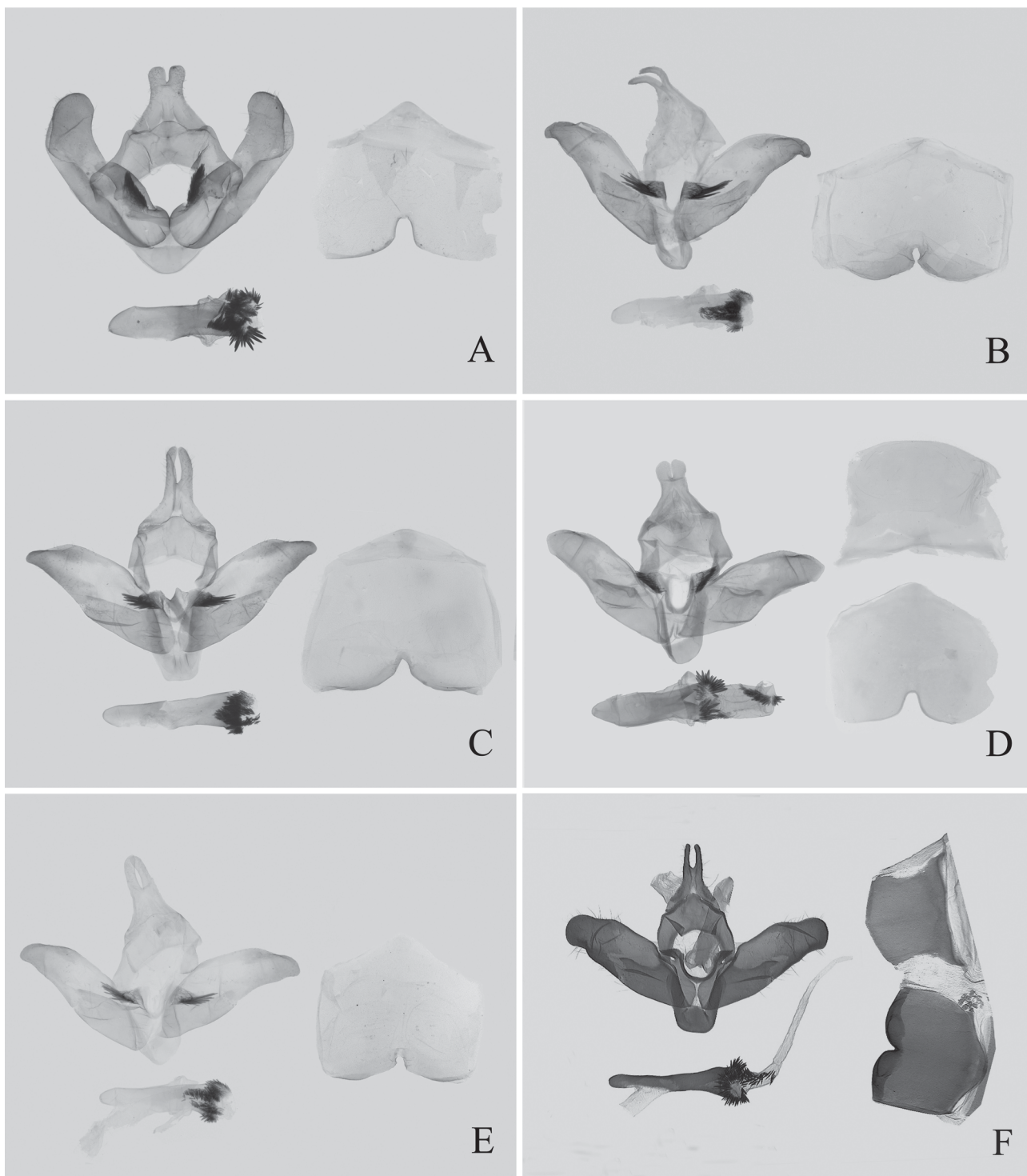


FIGURE 29. Male genitalia of *Mustilizans* spp. A. *M. hepatica* (Guangdong); B. *M. dierli* (Yunnan); C. *M. eitschbergeri* (Henan); D. *M. shennongi* (Guangxi); E. *M. lepusa* (Sichuan); F. *M. sinjaevi* (Sichuan).

Abdomen. Dark ochre with yellow stripes.

Male genitalia. Uncus bifid, lobes pointed and apically outcurved; gnathos a pair of long, curved, posterior directed processes; valva with a warty protuberance near apex, apex blunt with long hairs; saccus broad and short; aedeagus slightly curved near apex; vesica with numerous small cornutispinules; posterior margin of 8th sternite with V-shaped medially invagination; 8th tergite bell shaped.

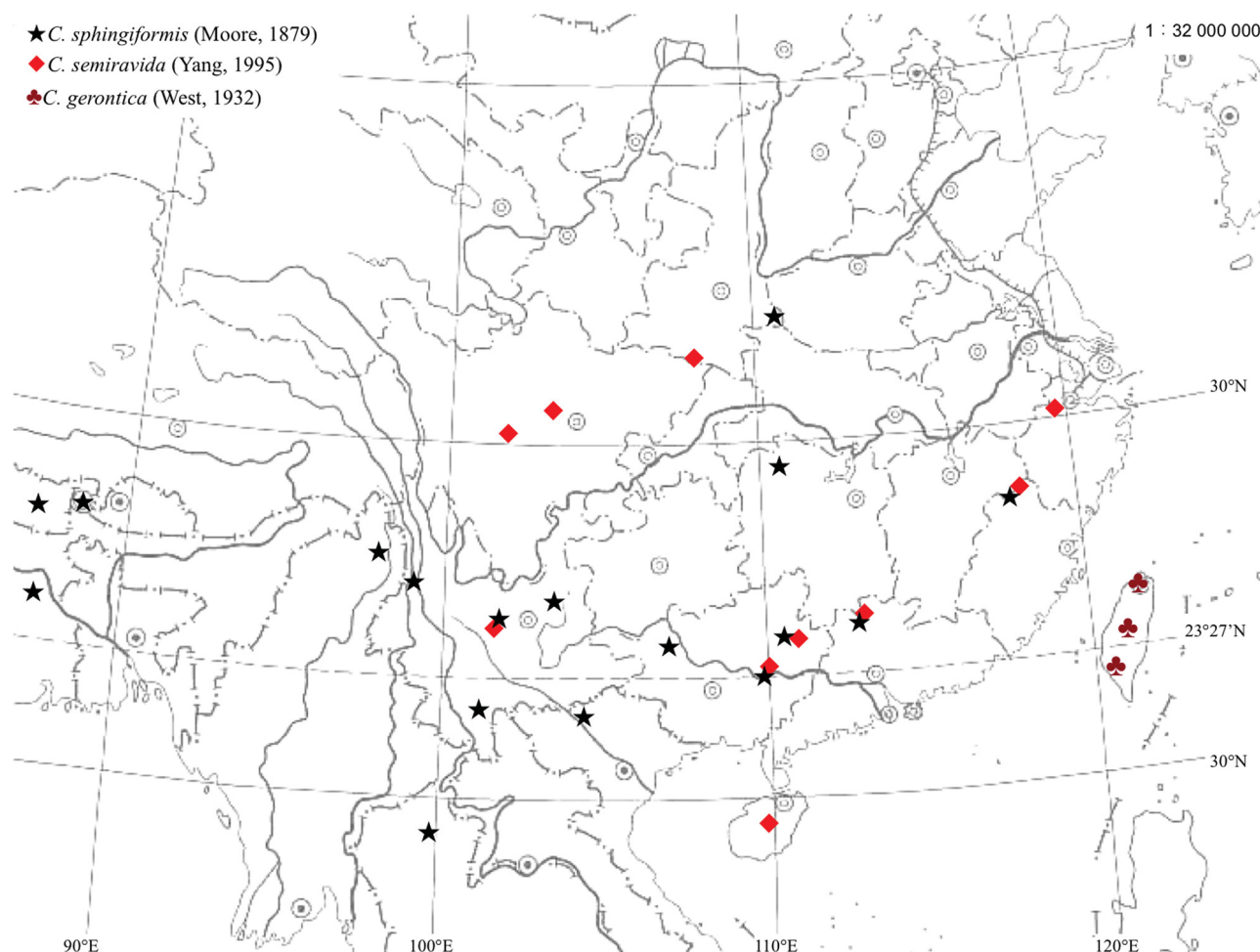
Female. Similar to male, but larger and with filiform antennae.

Female genitalia: apophyses posteriores longer than apophyses anteriores slender, with rounded tips; antrum membranous; ductus bursae sclerotized; corpus bursae oval with signum lacking.

Etymology. From the Latin *compar* (= comparable) plus the genus name *Mustilia*, referring to the establishment of the genus based on comparing it to the genus *Mustilia*, in which the type species of this new genus was previously included.

Distribution. Himalayan region.

Remarks. Although the type species, *Mustilia sphingiformis*, was described by Moore (1879) in *Mustilia*, it is very different from the other *Mustilia* species based on the following characters: uncus much narrower with lobes outcurved apically; valve broad with a warty protuberance near apex; posterior margin of 8th sternite with a narrow V-shaped notch. On the basis of these shared characters, we here establish a new genus including three species, all of which are recorded from China (Map 18).



Map 18. Distribution of *Comparmustilia* spp. mainly in China.

Key to the species of *Comparmustilia* gen. nov. in China

1. Uncus lateral edges distinctly convex medially; apical lobes narrow and pointed. *C. sphingiformis*
- Uncus lateral edges almost straight or slightly concave medially; apical lobes broader and blunt. 2
2. Uncus lateral edges concave medially; forewing dark transverse bands distinct. *C. semiravida*
- Uncus lateral edges almost straight medially, forewing dark transverse bands indistinct *C. gerontica*

55. *Comparmustilia sphingiformis* (Moore, 1879) (FIGURES 31E–31F, 32A, 32E) comb. nov.

Mustilia sphingiformis Moore, 1879, *Proc. Zool. Soc. London*: 407, pl. XXXIII, fig. 4. TL: “Masuri, N. W. Himalaya”.

Syntypes: male, female (BMNH) [examined].

Mustilia terminata Yang, 1995, **syn. nov.**, *Guangxi Sciences*, 2 (4): 36. TL: Guangxi, China.

Diagnosis. This species is characterized by the greyish-white forewing with very faint transverse lines, submarginal line turned outwards and reaching the apex, beyond which is a brown crescent-shaped patch.

Specimens examined. [FUJIAN] Mts. Wuyishan (Jiangxi-Fujian border): 6 males and 1 female, 50 km southeast of Yingtian city, 27°56'N, 117°25'E, 1600 m, March to May 2002, Siniaev & local collectors leg. (MWM). [HUNAN] Sangzhi County (Badagongshan National NR): 1 male, Mt. Tianpingshan, Hunan Province, China, 27.V.2009, Guo-Hua Huang leg. (HUNAU). [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, 22.IX.2001, Min Wang leg. (SCAU); 1 male, 18.III.2003, Guo-Hua Huang leg. (SCAU); 1 male and 1 female, 1.IV.2009, Hou-Shuai Wang leg. (SCAU); 1 male, 7.V.2009, Min Wang leg. (SCAU); 7 males, 18.V.2009, Hou-Shuai Wang leg. (SCAU); 1 male, 29.VII.2009, Min Wang leg. (SCAU). [GUANGXI] Baise City (Cenwangaoshan National NR): 1 male, 13.VIII.2002, Min Wang leg. (SCAU); 1 male, 4.VIII.2007, Min Wang leg. (SCAU); Napo Village (Defo County): 1 male, 31.VII.2008, Min Wang leg. (SCAU); Xing'an County (Mao'ershan National NR): 2 males, 13–20.VIII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU); Jingxiu County (Dayaoshan National NR): 5 males, 100 km southeast of Liuzhou city, 1200 m, 23°45'N, 109°45'E, 15–30.III.2005, Siniaev & his team leg. (MWM). [SHAANXI] Yuhuangding (Shangnan County): 1 male and 1 female, 1500 m, August 2000, native collector leg. (MWM). [YUNNAN] Mouding County: 12 males, 1300 m, 16.III–10.IV.2000, 25°19'N, 101°32'E, local collector leg. (MWM); Yunxian-Daxing: 9 males, 1200 m, 120 km south of Dali, 16.III–10.IV.2000, 24°30'N, 100°01'E, local collector leg. (MWM); Mojiang County (Mt. Dajianshan): 4 males, 2500 m, July 2000, local collector leg. (MWM); Luliang County (Mt. Laoyeshan): 12 males, 2700 m, June 2000, local collector leg. (MWM); East Youngde County (Mts. Daxueshan): 3 males, 2500 m, September 1999, Wang & Li leg. (MWM); Xishuanbanna Dai Autonomous Prefecture: 1 male, 50 km north of Jinghong, Guanping, 1000 m, 9.I–6.II.2003, 22°10'N, 101°E, S. Murzin leg. (MWM); 17 male, Puwen, 30 km southwest of Simao, 900 m, 10–30.IV.2000, 22°30'N, 100°02'E, Brechlin's local collector leg. (MWM); Simao County (Mt. Mangxiba): 3 males, 18 km south of Simao city, 22°28'N, 101°01'E, 1280 m, 15–21.VI.1999, local collector leg. (MWM).

Bionomics. Robinson *et al.* (2001) and Chu & Wang (1996) reported the larval host plants as of *Hibiscus rosa-sinensis* Linn., 1753 (Malvaceae), *Ficus retusa* Linn. and *Morus* spp. (both Moraceae) and *Fraxinus pennsylvanica* Marsh., 1785 (Oleaceae).

Distribution. Mainland China (Jiangxi, Fujian, Hunan, Guangdong, Guangxi, Shaanxi, Yunnan), India, Nepal, Sikkim, Myanmar, northern Thailand, northern Vietnam, northern Malaysia.

Remarks. This species is endemic to the Sino-Himalayan region. Yang (1995a) described *Mustilia terminata* based on a single specimen collected from Huaping National NR but did not check the types of other *Mustilia* species. Here, we consider *M. terminata* as a synonym of *C. sphingiformis* based on the original description of the species *M. terminata* (Yang, 1995a).

56. *Comparmustilia semiravida* (Yang, 1995) (FIGURES 30A–30D, 32B–32C, 32F) comb. nov.

Mustilia semiravida Yang, 1995, *Guangxi Sciences*, 2 (4): 36. TL: Guangxi, China.

Mustilia orthocosta Yang, 1995, **syn. nov.**, *Insects of Baishanzu Mountain, Eastern China*: 355. TL: Zhejiang, Mt. Baishanzu, China.

Diagnosis. Very similar to *C. sphingiformis*, but can be distinguished by the following characters: forewing with a distinct pattern of transverse lines; lateral edges of uncus concave medially and the two lobes broader; corpus bursae ovoid.

Specimens examined. [ZHEJIANG] Lin'an County (Qingliangfeng NR): 3 males, 28.VII.2011, Xing Wang & Yuan-Yuan Liu leg. (HUNAU). [JIANGXI] Guixi County (Yingtian City, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E): 18 males, July 2003, Siniaev & his team leg. (MWM); 27 males, October 2004, Siniaev & his team leg. (MWM). [FUJIAN] Wuyishan City (Jiangxi-Fujian border, 1600 m, 27°56'N, 117°25'E, 50 km southeast of Yingtian city in Jiangxi Province): 1 male, June 2002, Sinjaev & local

collectors leg. (MWM); 102 males and 1 female, April to June 2002, Siniaev & local collectors leg. (MWM); Daimaoshan: 4 males, 60 km Northwest of Longyan city, 1300 m, 25°32'N, 116°51'E, April 2005, Siniaev & his team leg. (MWM). [GUANGDONG] Ruyuan County (Nanling National NR): 3 males and 2 females, 22.IX.2001, Min Wang leg. (SCAU); 1 male, 23.VII.2002, Min Wang leg. (SCAU); 4 males, 29–31.III.2003, Guo-Hua Huang leg. (SCAU); 2 males and 1 female, 18.VIII.2003, Guo-Hua Huang leg. (SCAU); 1 male, 8.V.2009, Jian-Yan Du leg. (HUNAU); 3 males, 10.V.2009, Jian-Yan Du leg. (SCAU); 3 males, 18.V.2009, Hou-Shuai Wang leg. (SCAU); 1 male, 24.VIII.2009, Hou-Shuai Wang leg. (HUNAU). [GUANGXI] Mao'ershan National NR (Xin'an County): 2 males, 13–20.VIII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU); 1 male, 900 m, 28.V.2010, Guo-Hua Huang, Jie Li & Gong Chen leg. (HUNAU); Dayao Shan (Jingxiu County): 18 males, 100 km Southeast Liuzhou, 1200 m, 23°45'N, 109°45'E, 15–30.III.2005, Siniaev & his team leg. (MWM). [HAINAN] Wuzhishan City: 3 males, Mt. Heling and Mt. Wuzhishan, 1000–18000 m, early February to early May 2000, Siniaev & his team leg. (MWM). [SHAANXI] 2 males, Dabashan Mt., 1800 m, 15 km south of Shouman village, 32°08'N, 108°37'E, summer 2000, local collector leg. (MWM); [SICHUAN] Yingjing County: 1 male, Mt. Nibashan, 27.VII.2009, Guo-Hua Huang leg. (HUNAU); Duijiangyan City (Mt. Qingchenghoushan, 70 km northwest Chengdu city, 1400 m): 72 males, 1–22.V.2005, S. Murzin leg. (MWM); 1 female, 8–14.V.2005, S. Murzin leg. (MWM); Mts. Qionglaihan: 21 males, 1400 m, 31°13'N, 102°23'E, June 2006, Siniaev & his team leg. (MWM); Duijiangyan City (Mt. Qingcheng, 60 km west Chengdu city): 8 males, 1200 m, 20–30.V.2004, S. Murzin leg. (MWM); Wenchuan County (Wolong National NR): 2 males, Mt. Siguliangshan, 31°09'N, 103°20'E, July 2005, Siniaev & his team leg. (MWM). [YUNNAN] 1 male, Daxueguoshan, Zhengyuang side, Ailaoshan National NR, 3100 m, June 2000, local collectors leg. (MWM).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Zhengjiang, Jiangxi, Fujian, Guangdong, Guangxi, Sichuan, Yunnan) and Hainan.

Remarks. This species is endemic to China. Yang (1995a) described *M. semiravida* in the journal “Guangxi Sciences” published in November 1995, based on a single specimen collected by Ji-Kun Yang & Chun-Qing Yang on Mao'ershan on August 20, 1992. In December of the same year, Yang (1995b) published *M. orthocosta* in the book, “Insects of Baishanzu Mountain, Eastern China”, also based on only a single specimen, this one collected on Mt. Baishanzu on April 23, 1994 by Yi-Zhong Xu. According to the specimens we have collected, there is no doubt that those two species are conspecific, differing only in individual variation in forewing color. Thus, we consider *Mustilia orthocosta* to be a junior synonym of *M. semiravida*. However, additional research is required to understand the taxonomy of this species more exactly and some geographic populations will most probably later be separated as species or subspecies.

57. *Comparmustilia gerontica* (West, 1932) (FIGURES 30E–30F, 31A–31D, 32D, 32G–32H) comb. nov.

Mustilia gerontica West, 1932, *Novit. Zool.*, 37: 216. TL: “Formosa, Rantaizan, 7,500 ft”. Holotype: male (BMNH) [examined].

Diagnosis. This species can be distinguished from the other species by the following characters: discal cell of forewing with a distinct black spot and lateral edges of the uncus neither convex nor concave.

Specimens examined. [TAIWAN] 1 male, Holotype deposited in BMNH with the label “Type; male, Rantaizan, Formosa. 7500 ft. 11.V.1909, A.E. Wileman; Wileman Coll., B.M. 1929-261; *Mustilia gerontica*, Holotype, West”. 4 boxes full with the species in MWM from most counties of Taiwan. Taoyuan County: 1 male, 16 km east of Fuhsing, 24°50'N, 121°24'E, 870 m, 5–6.IV.1986 (MWM). Yilan County: 1 male, Fushan Botanic Garden, 750 m, 3.XII.2010, Shipher Wu & Wei-Chun Chang leg. (TFRI); 2 males, Fushan Botanic Garden, 750 m, 26.III.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 female, Mingchi, 1050 m, 17.IV.2012, Shipher Wu leg. (TFRI). Taichung County: 1 female, Anmashan, 1100 m, 8.VI.2012, Shipher Wu leg. (TFRI). Nantou County: 1 male, Shishan, 2450 m, 13.V.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 14.II.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Dongpu Lodge, 2500 m, 22.III.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 25.IV.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 14.IX.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); Hualien County: 1 male, Tianxiang, 500 m, 6.VI.2013, Shipher Wu & Wei-Chun Chang leg. (TFRI). Miaoli County: 1 male, Guanwu, 2000 m, 28.VIII.2010, Shipher Wu leg. (TFRI); 1 male, Guanwu, 2000 m, 9.III.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI).

Bionomics. The larval host plant has not been reported and identified. The larvae have a swollen thorax (Plate 9F). The adults fly throughout almost the whole year (Plate 9D–9E).

Distribution. Restricted to Taiwan.

Remarks. In Taiwan, this species is on the wing at altitudes of 870–2500 m, from February to November, and has 2 or 3 generations per year. Its status needs further study, probably with molecular DNA methods, to confirm its relationship with the mainland *sphingiformis*, of which it may only be a Taiwanese subspecies.

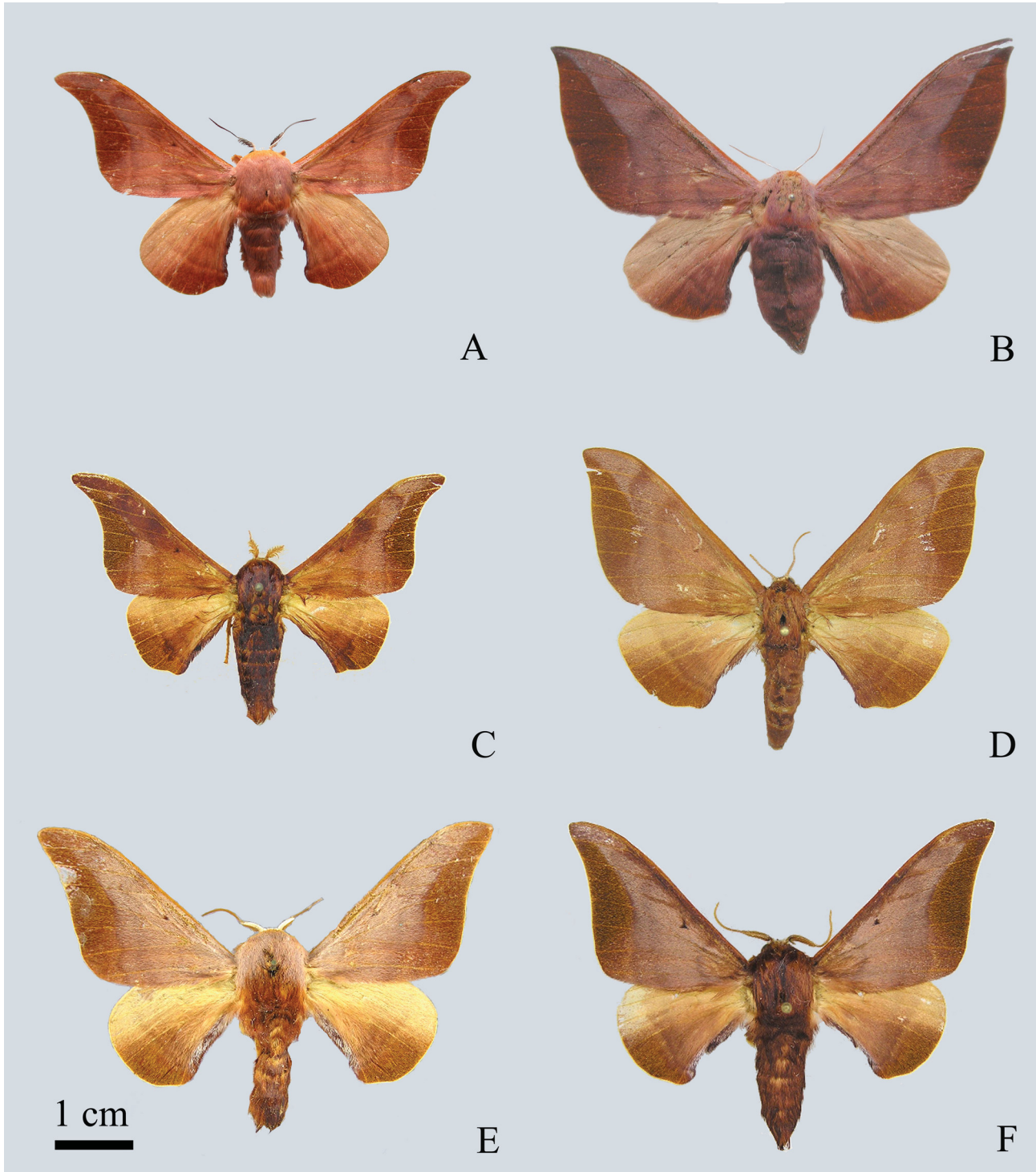


FIGURE 30. Adults of *Comparmustilia* spp. A. *C. semiravida*, male (Guangdong); B. *C. semiravida*, female (Guangdong); C. *C. semiravida*, male (Jiangxi-Fujian border); D. *C. semiravida*, female (Sichuan); E. *C. gerontica*, male (Taiwan), holotype; F. *C. gerontica*, male (Taiwan).

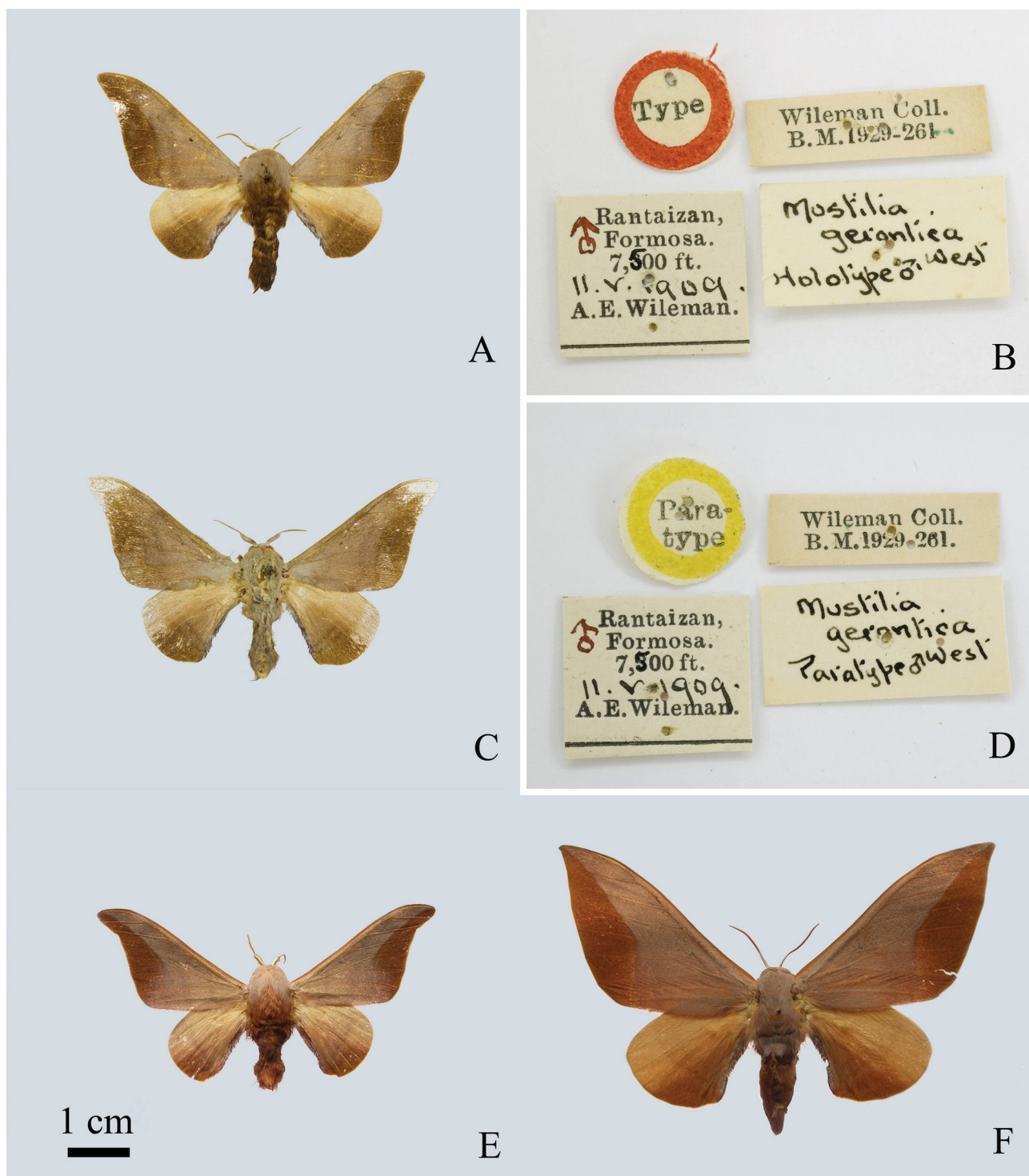


FIGURE 31. Adults and labels of *Comparmustilia* spp. A–B. *C. gerontica*, male (Taiwan), holotype; C–D. *C. gerontica*, male (Taiwan), paratype; E. *C. sphingiformis*, male (Guangdong); F. *C. sphingiformis*, female (Guangdong).

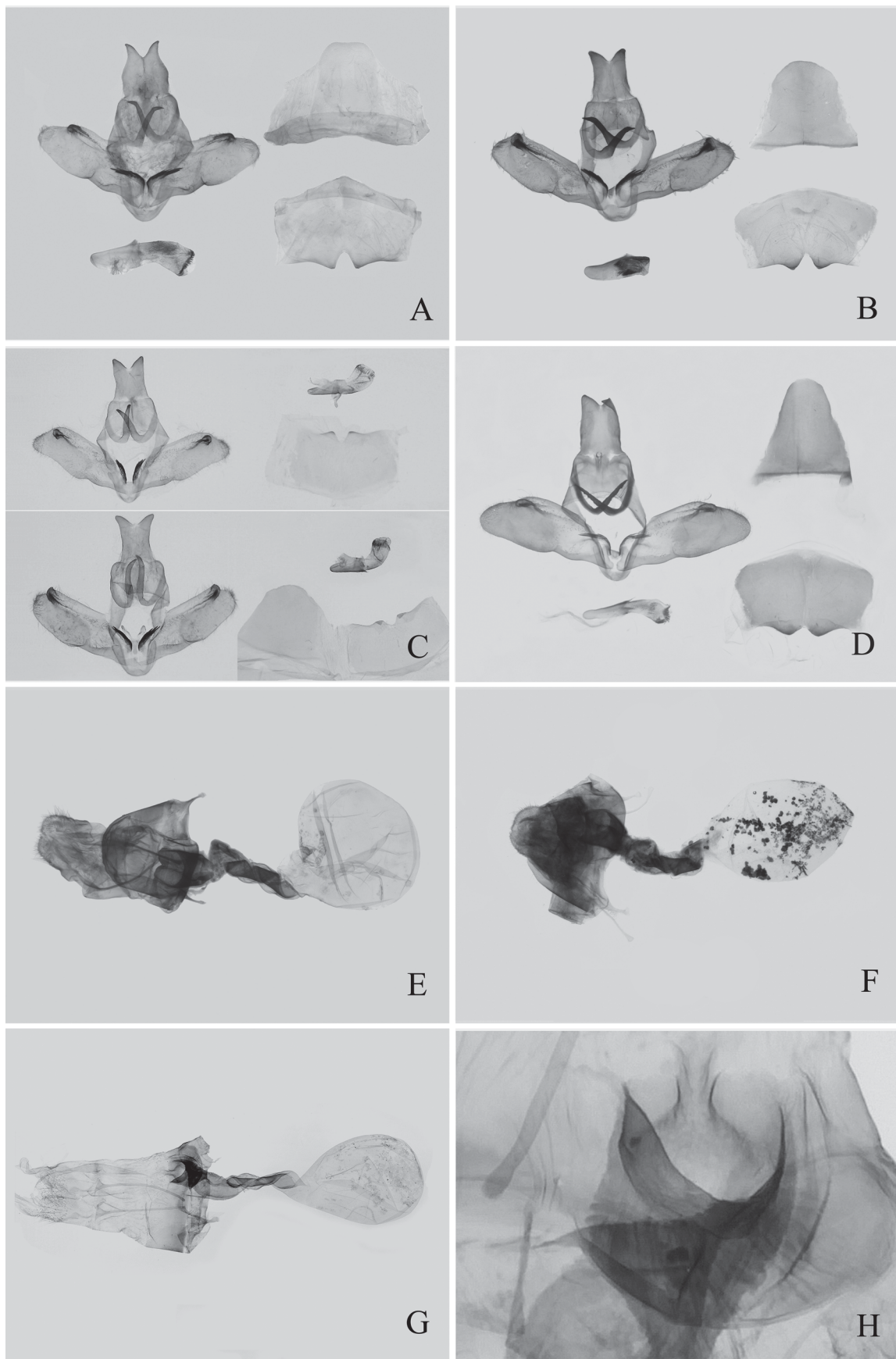


FIGURE 32. Genitalia of *Comparmustilia* spp. A. *C. sphingiformis*, male (Guangdong); B. *C. semiravida*, male (Guangdong); C. *C. semiravida*, male (above from Fujian, below from Sichuan); D. *C. gerontica*, male (Taiwan); E. *C. sphingiformis*, female (Guangdong); F. *C. semiravida*, female (Guangdong); G–H. *C. gerontica*, female (Taiwan).

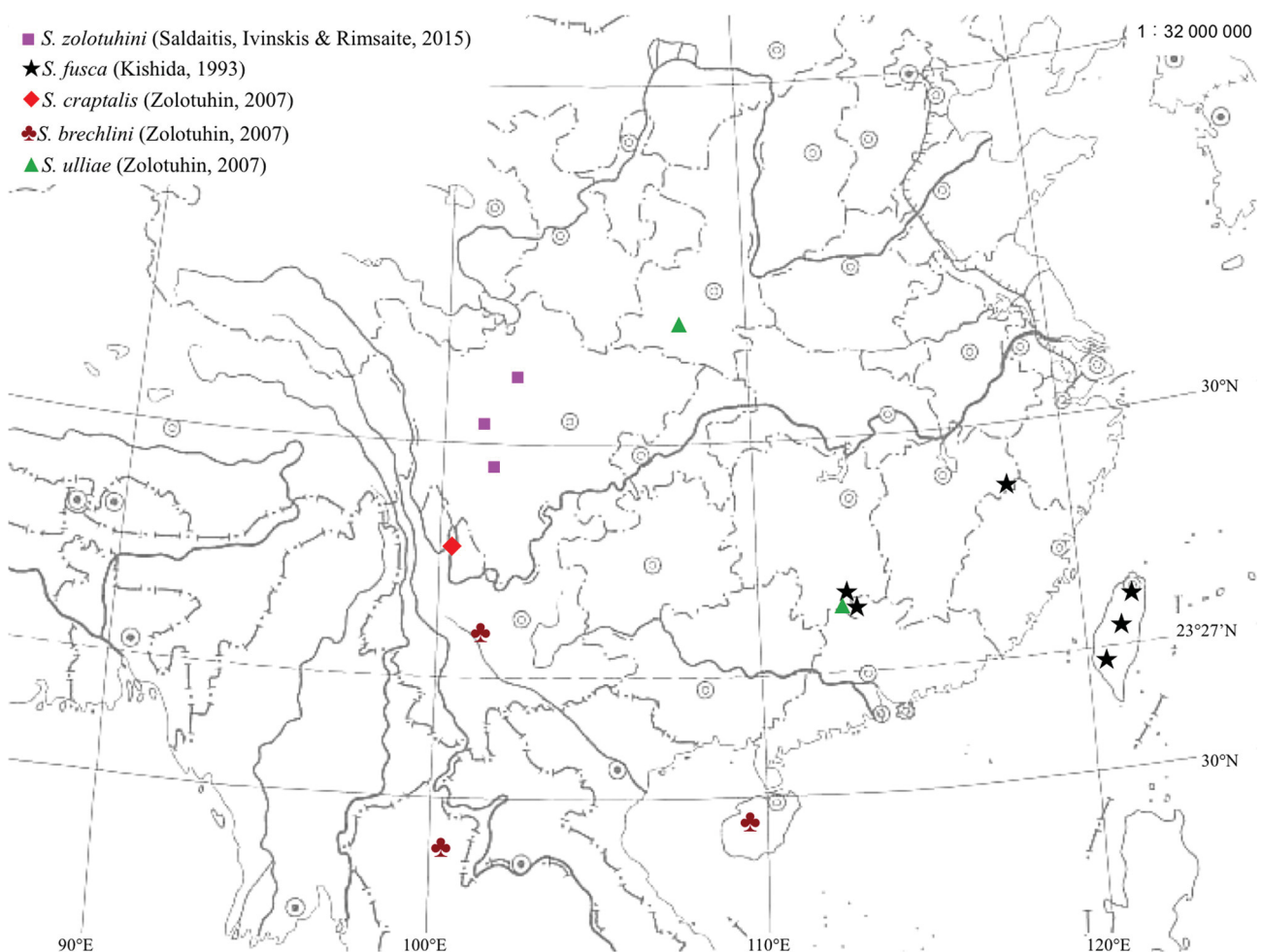
XIX. *Smerkata* Zolotuhin, 2007 (FIGURES 33–35) stat. nov.

Smerkata Zolotuhin, 2007, *Neue ent. Nachr.* 60: 193. Originally proposed as a subgenus of *Mustilia* Walker, 1865. Type species: *Mustilia phaeopera* Hampson, 1910, by original designation.

Diagnosis. Characterized by the following features: body and wings brown or dark chocolate; male antennae pectinate basally and filiform distally; forewing narrow with apex produced and falcate; uncus bifid and very broad, the finger-shaped lobes widely separated by a U-shaped invagination; a warty protuberance present on the valva. Female similar to male but larger and more robust, and the antenna entirely filiform.

Distribution. Oriental Region.

Remarks. This genus name was given firstly as a subgenus name of the genus *Mustilia* (Zolothin, 2007). Here, we consider that the characters for distinguish the subgenus should be in the genera level, and additionally they are different from the Synapomorphies of the genus *Mustilia* (Zolothin, 2007). The larva of the type species is broad and flattened at the front, tapering and cylindrical behind (Lin, 2005). We record four *Smerkata* species from China (Map 19). Species identification is rather difficult because of their common ground plan in the bodies. External characters should be used primarily. Trochodendraceae have been recorded as the larval host.



Map 19. Distribution of *Smerkata* spp. mainly in China.

Key to the species of *Smerkata* in China

1. Forewing yellowish brown; apex only slightly falcate or blunt 2
- Forewing dark chocolate or reddish-brown; apex strongly falcate 4
2. Tegumen lobes longer, valvae rounded distally *S. zolotuhini*

- Tegumen lobes shorter, valvae lightly pointed or pointed distally3
- 3. Apex of forewing slightly hook-shaped, without white oblique band*S. craptalis*
- Apex of forewing blunt, with an oblique white band *S. ulliae*
- 4. Black spot in forewing discal cell edged with white; aedeagus curved*S. fusca*
- Black spot in forewing discal cell edged without white, aedeagus straight*S. brechlini*

58. *Smerkata fusca* (Kishida, 1993) (FIGURES 33A–33H, 35A, 35G–35H) comb. nov.

Mustilia fusca Kishida, 1993, *Japan Heterocerist's J.* 173: 407. TL: “Taiwan, Taoyuan Hsien, Lalashan, 1500 m”. Holotype: male (NSMT) [examined].

Diagnosis. Characterized by the dark chocolate forewing, with antemedial line arched, medial and postmedial lines wavy, and discal cell with a black spot.

Specimens examined. [TAIWAN] Taoyuan County: 1 male and 1 female, Xicun, 1090 m, 19.XI.2011, Shipher Wu leg. (TFRI); 1 female, Ming Chyr Forest Recreation Area, 24°39'21"N, 121°28'19"E, 1160 m, 27–28.XI.1998, G. Fahian & Z. Korsos leg. (MWM); Yilan County (Fushan Botanic Garden, 750 m): 1 male, 3.XII.2010, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 female, 9.I.2012, Shipher Wu leg. (TFRI); Taichung County: 1 male, Xueshan Trail Opening, 2250 m, 20.XI.2011, Shipher Wu leg. (TFRI); Nantou County: 1 male, Dongpu Lodge, 2500 m, 30.XI.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 2 males, Meifeng, 2100 m, 2.I.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Meifeng, 2100 m, 20.XII.2012, Shipher Wu leg. (TFRI); 1 male, Meifeng, 2100 m, 10.I.2013, Shipher Wu leg. (TFRI); Hualien County: 1 female, Ci'en, 1950 m, 21.XI.2011, Shipher Wu leg. (TFRI); 1 male, Guanyuan, 10.XI.2012, Shipher Wu leg. (TFRI); Miaoli County: 3 males, Guanwu, 2000 m, 26.XI.2010, Shipher Wu leg. (TFRI); [JIANGXI] Guixi County (Yingtian City): 9 males, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, November 2005, Siniaev & his team leg. (MWM); [HUNAN] Yizhang County (Mangshan National NR): 20 males and 1 female, 1500 m, Mt. Shikenkong, 24°54'N, 112°57'E, 1–10.XII.2005, Siniaev & his team leg. (MWM). [GUANGDONG] Ruyuan County (Nanling National NR): 5 males, 11.XII.2008, Liu-Sheng Chen & Hou-Shuai Wang leg. (SCAU); 4 males, 9–17.XII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU).

Bionomics. *Trochodendron aralioides* Sieb. et Zucc., 1838 (Trochodendraceae) has been recorded as its larval host plant. Lin (2005) reported the immature stages based on material from Taiwan. The larvae are easily distinguished from other bombycid larvae (Plate 10A–10B) by the strongly flattened thoracic segments. Adults appear only in late autumn and winter (Plate 9G–9H).

Distribution. Mainland China (Jiangxi, Hunan, Guangdong) and Taiwan.

Remarks. A common autumn species in Taiwan and the Nanling Mountains, Guangdong.

59. *Smerkata craptalis* (Zolotuhin, 2007) (FIGURES 34A–34C, 35B)

Mustilia (Smerkata) craptalis Zolotuhin, 2007, *Neue ent. Nachr.* 60: 193. TL: “China, Prov. Nord-Yunnan, Li-kiang, ca 4000 m”. Holotype: male (ZFMK) [examined].

Diagnosis. Very similar to *S. fusca* in male genitalia, but can be distinguished by the following characters: wings paler and reddish yellow; transverse lines and patterns distinct; forewing apex obscurely falcate; inner margin of hindwing not concave near tornus.

Specimens examined. [YUNNAN] 1 male, Holotype deposited in ZFMK with the label “Li-kiang, ca. 4000 m, Prov. Nord-Yuennan, 9.IX.1935, H. Höne”; 1 male, Li-kiang (China), Province Nord-Yuennan (northern Yunnan Province), 6.IX.1935, H. Höne leg. (MWM); 1 female, A-tun-tse (Nord-Yunnan), Obere, Höhe, ca. 4500 m, 3.VIII.1937, H. Höne leg. (MWM).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Yunnan); probably conspecific specimens are known from northern Vietnam.

Remarks. The adults fly in autumn and there is one generation per year. So far it has only been confirmed in north Yunnan.

60. *Smerkata ulliae* (Zolotuhin, 2007) (FIGURES 34D–34F, 35D–35E)

Mustilia (Smerkata) ulliae Zolotuhin, 2007, *Neue ent. Nachr.* 60: 200. TL: “China, Shaanxi, Taibaishan, Tsinling Mt., 1900 m”. Holotype: male (MWM) [examined].

Diagnosis. Can be distinguished from other species by the following characters: forewing yellowish brown with medial and postmedial lines distinctly sinuate; antemedial line arched; an interrupted white band running inward from the apex.

Specimens examined. [SHAANXI] 1 male, Holotype with the label “X.2004, CHINA, Shaanxi, 1900 m, Taibaishan, Tsinling Mts, V. Sinjaev & his team leg., HOLOTYPE, *Mustilia ulliae*, V. Zolotuhin 2006”; Baoji County (Jialingjiangyuantou): 2 males, 1600 m, 22.XI.2011, Min Wang leg. (SCAU); Taibai County (Mt. Taibaishan): 2 males, 1900 m, 33°55'N, 107°44'E, October 2004, Viktor Sinyaev & his team leg. (MWM); [HUNAN] 1 male, paratype with the label “CHINA-HUNAN, Nanling Mts. 1500 m, Shikengkong Mt., 24°54'N, 112°57'E, 7.II.2003, V. Siniaev & his team leg., Genitalpräparat Heterocera Nr. 10977, Museum Witt Munchen, PARATYPE, *Mustilia ulliae*, V. Zolotuhin 2006”.

Bionomics. The larval host is unknown.

Distribution. Mainland China (Hunan, Guangdong, Shaanxi).

Remarks. This species is externally similar to *Andraca* species, but the genital morphology, supported by DNA barcode data, confirms that it belongs to *Smerkata*, near *S. craptalis* (Zolotuhin, 2007).

61. *Smerkata brechlini* (Zolotuhin, 2007) (FIGURES 34G, 35C)

Mustilia (Smerkata) brechlini Zolotuhin, 2007, *Neue entomologische Nachrichten* 60: 194. TL: “Thailand, Changwat Nan, 30 km E of Pua, 1700 m”. Holotype: male (MWM) [examined].

Diagnosis. This species is very similar to *S. fusca*, but can be distinguished by color uniformity except a dark chocolate crescent spot, uncus without “V” shaped at the middle.

Specimens examined. [HAIRAN] Ledong County (Jianfengling National NR): 1 male, 29.XI.2003, Guo-Hua Huang & Min Wang leg. (SCAU). [YUNNAN] Jingdong County (Ailaoshan National NR): 1 male, 2490 m, 18.XI.2010, Jin Chen photographed (IZCAS).

Bionomics. The larval host is unknown. The adults fly at high altitudes in mountains in autumn and early winter (Plate 10C). This species has just one generation per year.

Distribution. Mainland China (Hainan, Yunnan), Thailand.

Remarks. The above specimens are the first records for China.

62. *Smerkata zolotuhini* (Saldaitis, Ivinskis & Rimsaite, 2015) (FIGURES 34H, 35F)

Mustilia (Smerkata) zolotuhini Saldaitis, Ivinskis & Rimsaite, 2015, *Zootaxa* 3915 (3): 439. TL: “China, West Sichuan, road Bamei/Danba, Taizangou valley, 3700 m, N 30°28.693", E 101°38.863". Holotype: male (MWM) [examined].

Diagnosis. This species is very similar to *S. craptalis*, but can be distinguished by an even lighter ground color, tegumen lobes shorter and twice narrowed, gnathos branches more robust, and valva broader and shorter.

Specimens examined. [SICHUAN] West Sichuan: 1 male (holotype), road Bamei/Danba, Taizangou valley, 3700 m, 30°28'N, 101°38'E, 09.X.2010, A. Saldaitis leg. (MWM); 1 male (paratype), near Ba Mei, 3689 m, 30°28'N, 101°38'E, 09.X.2012, A. Floriani & A. Saldaitis leg. (MWM); 1 male (paratype), the same data except 3500 m, 22.VIII.2014 (SCAU); 1 male (paratype), near Ba Mei, 3500 m, 30°28'N, 101°38'E, 22.VIII.2014, A. Floriani & A. Saldaitis leg. (MWM); 1 male (paratype), near Moxi, 3954 m, 29°53'N, 102°00'E, 07.X.2012, A. Floriani & A. Saldaitis leg. (MWM); North Sichuan: 1 male (paratype), near Barkam, Zhegushan pass, 3300 m, 31°55'N, 102°39'E, 21.IX.2011, A. Floriani leg. (MWM).

Bionomics. The larval host is unknown. The adults were attracted to light during the cold night and collected at high altitudes (3300 to 3900 m) in mountains from the end August to October (Saldaitis *et al.*, 2015). Saldaitis *et al.* (2015) also reported that the adults were found in virgin mixed mountain forests dominated by rhododendron, bamboo and various broad-leaved trees.

Distribution. Mainland China (Sichuan).

Remarks. The species is recorded only from Sichuan Province, and discovered in only three valleys near Maerkang county, Moxi town and Bamei town (Saldaitis *et al.*, 2015).

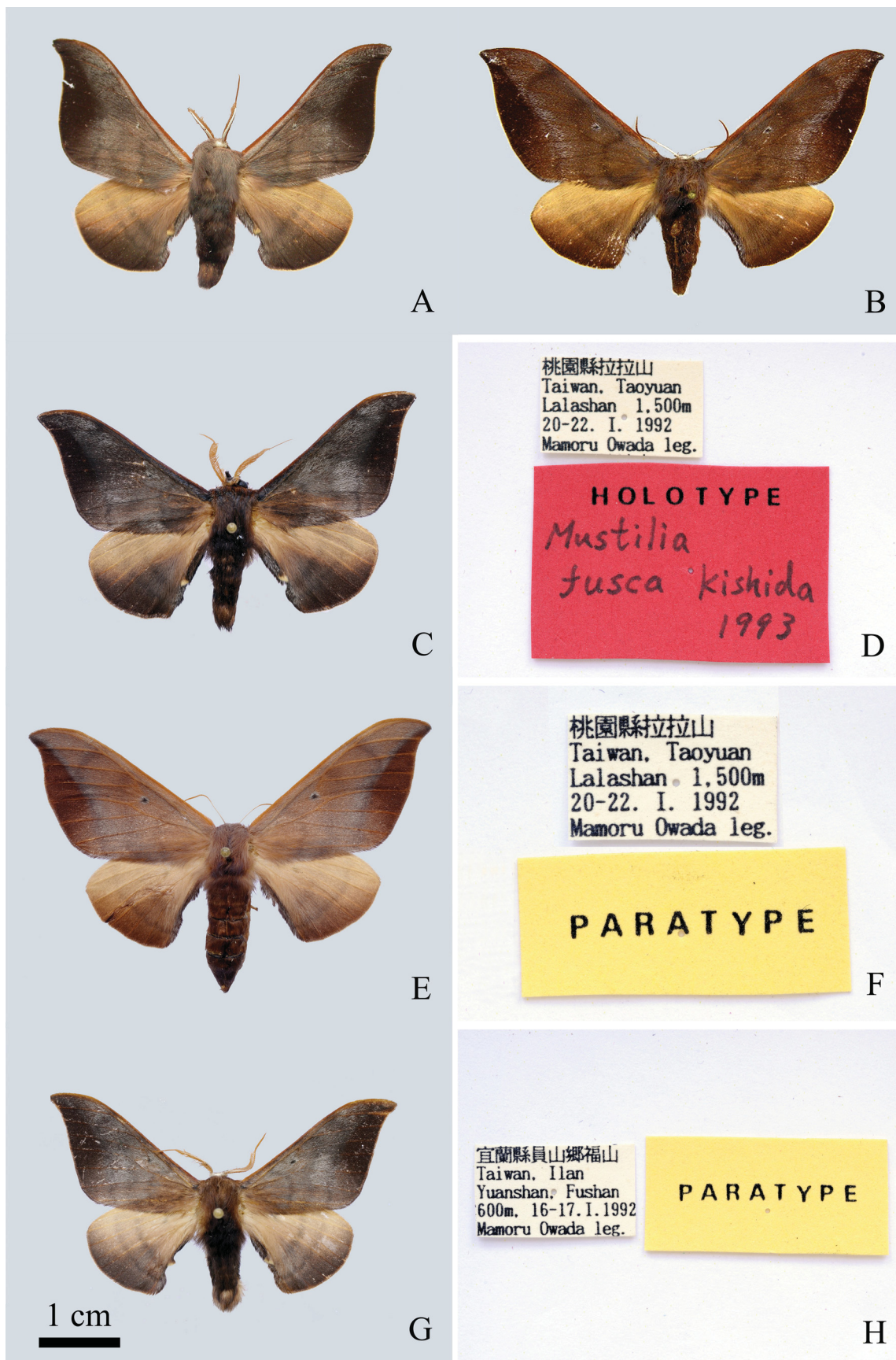


FIGURE 33. Adults and labels of *Smerkata* spp. A. *S. fusca*, male (Guangdong); B. *S. fusca*, female (Taiwan); C–D. *S. fusca*, male (Taiwan), holotype; E–F. *S. fusca*, female (Taiwan), paratype; G–H. *S. fusca*, male (Taiwan), paratype.

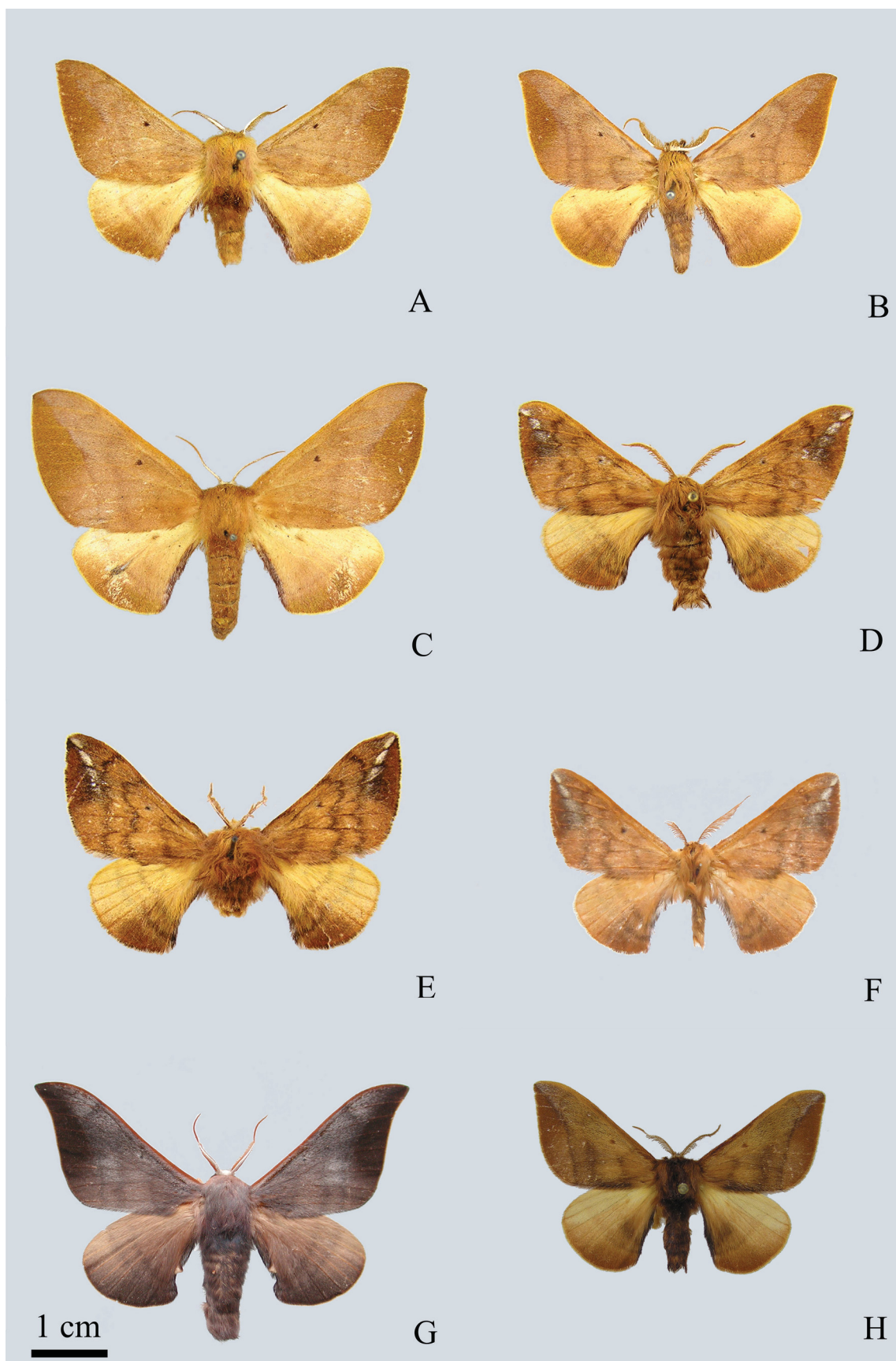


FIGURE 34. Adults of *Smerkata* spp. A. *S. craptalis*, male (Yunnan), holotype; B. *S. craptalis*, male (Yunnan); C. *S. craptalis*, female (Yunnan) D. *S. ulliae*, male (Shaanxi), type; E. *S. ulliae*, male (Hunan), type; F. *S. ulliae*, male (Shaanxi); G. *S. brechlini*, male (Hainan); H. *S. zolotuhini*, male (Sichuan), paratype.

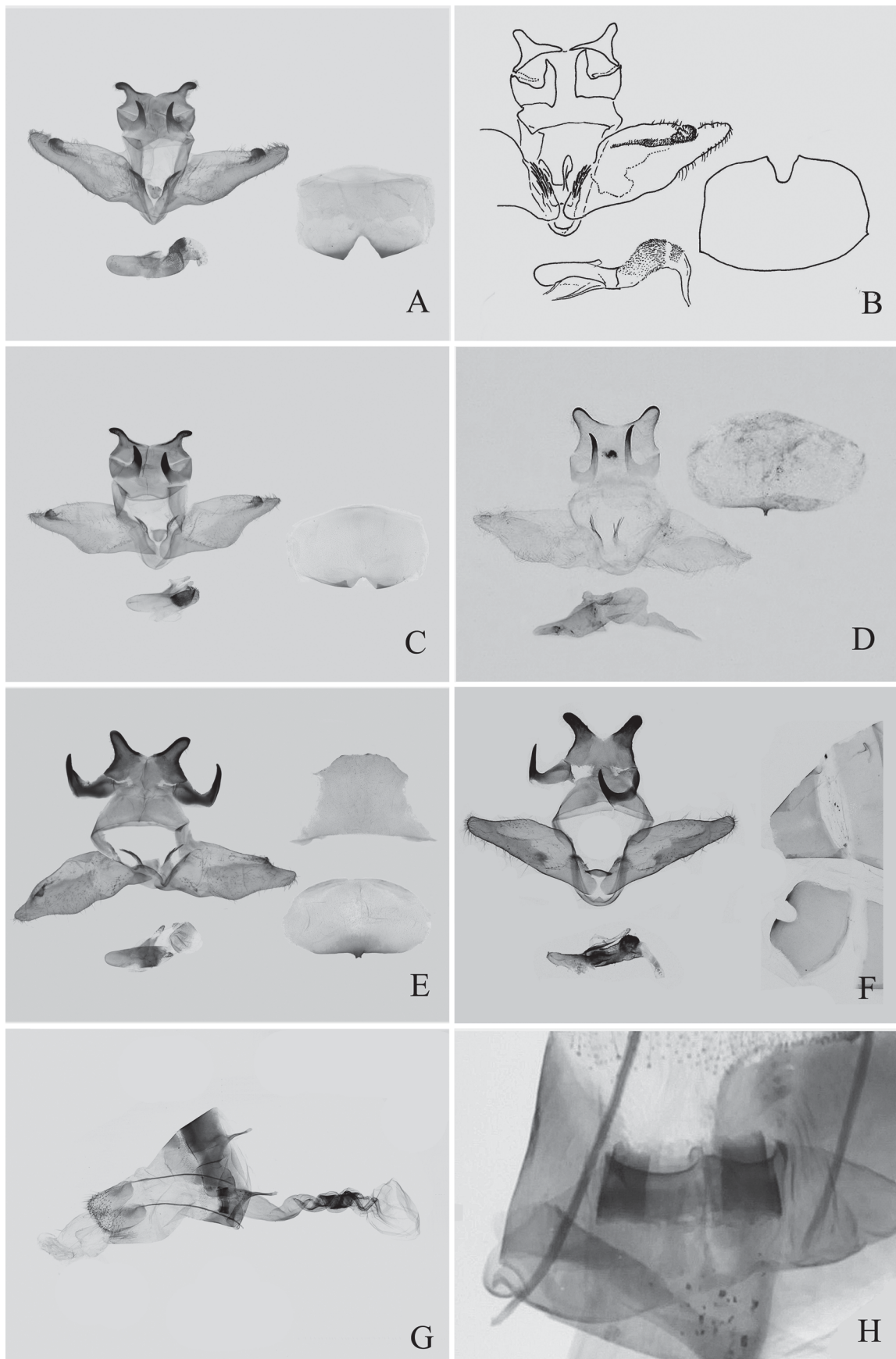


FIGURE 35. Genitalia of *Smerkata* spp. A. *S. fusca*, male (Guangdong); B. *S. craptalis*, male (Yunnan); C. *S. brechlini*, male (Hainan); D. *A. ulliae*, male (Hunan), type; E. *A. ulliae*, male (Shaanxi); F. *S. zolotuhini*, male (Sichuan), paratype; G–H. *S. fusca*, female (Taiwan).

XX. *Dalailama* Staudinger, 1896 (FIGURES 36–37)

Dalailama Staudinger, 1896, *Dt. ent. Z. Iris* 8 (2): 303. Type species: *Dalailama bifurca* Staudinger, 1896, by monotypy.

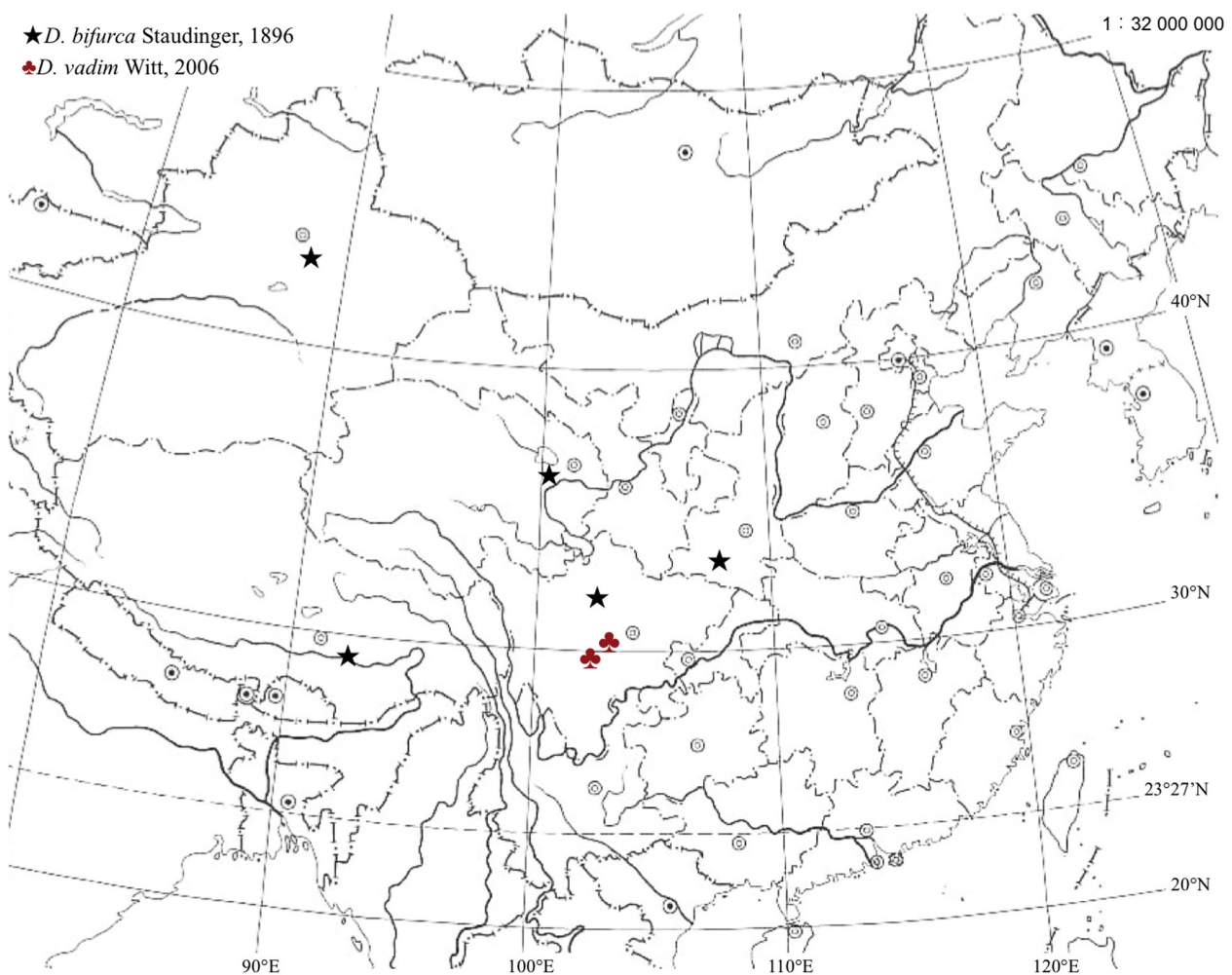
Dailalama: Staudinger, 1901, *Cat. Lepid. palaearct. Faunengeb.* (1): 128. Incorrect subsequent spelling.

Deilelamia: Pagenstecher, 1909, *Geschichte eur. Schmett.*: 433. Incorrect subsequent spelling.

Diagnosis. Characterized by khaki or maroon-brown ground colour, antenna in male pectinate basally and filiform distally, fore- and hindwings with complex patterns of lines, discal cell with a black spot outlined in white, uncus bifid, a dark protuberance on the valva. Female similar to male but antenna filiform and forewing apex slightly falcate.

Distribution. Sino-Himalayan Region.

Remarks. This genus was established without being placed in a family. Staudinger (1901) included it in Bombycidae, a placement with which Grünberg (1911) and Fletcher & Nye (1982) agreed. We concur and here record two species from China (Map 20).



Map 20. Distribution of *Dalailama* spp. mainly in China.

Key to the species of *Dalailama* in China

1. Fore- and hindwing veins beyond postmedial line not highlighted in white *D. bifurca*
- Fore- and hindwing veins beyond postmedial line highlighted in white *D. vadim*

63. *Dalailama bifurca* Staudinger, 1896 (FIGURES 36A–36D, 37A, 37C)

Dalailama bifurca Staudinger, 1895 [1896], *Dt. ent. Z. Iris* 8 (2): 303, pl. 5, fig. 9. TL: [Qinghai, China] ”im innern Tibet, zwischen dem Lob Noor und Kuku Noor”. Lectotype: male (ZMHU) [examined].

Diagnosis. Characterized by the following features: medial line of forewing arched, area between antemedial and postmedial lines darker; distal to postmedial line with a white line reaching apex, veins not highlighted in white.

Specimens examined. [SHAANXI] Foping County: 1 male, Mts. Tsinling, 1900 m, 33°45'N, 107°01'E, June 2004, Siniaev & his team leg. (MWM); Taibai County (Mt. Taibaishan): 3 males, Dudamen village, 2600 m, 33°55'N, 107°44'E, June 2006, Siniaev & his team leg. (MWM); 4 males, Houzhenzi village, 33°52'N, 107°44'E, 2600 m, 10–12.V.2000, Viktor Sinyaev & Plutenko leg. (MWM); [SICHUAN] road from Songpan to Zoige: 1 male, 3500 m, 32°55' N, 103°24' E, 5.VII.2010, Floriani & Saldaitis leg. (MWM); road from Songpan to Jiuzhaigou: 1 female, 2600 m, 33°12' N, 103°44' E, 3.VII.2010, Floriani & Saldaitis leg. leg. (MWM); [XIZANG (TIBET)] Kuku-Noor: 1 male, 21.IX.1898, Rückbeil, *bifurca* Staudinger.

Bionomics. The host is unknown. The adults are on the wing from June to July in Sichuan Province.

Distribution. Mianland China (Shaanxi, Sichuan, Xinjiang, Qinghai, Xizang (Tibet)).

Remarks. This species flies on the Tibetan Plateau and Qingling Mountains. All specimens were collected by light trapping.

64. *Dalailama vadim* Witt, 2006 (FIGURES 36E–36F, 37B, 37D)

Dalailama vadim Witt, 2006, *Entomofauna* 27 (3): 48. TL: “Sichuan, China, 3000 m, 20 km western Qiaoqi town, 55 km north of Baoxing”. Holotype: male (MWM) [examined].

Diagnosis. Very similar to *D. bifurca*, but can be easily distinguished by the white-highlighted veins distal to the postmedial postmedial line on both pairs of wings.

Specimens examined. [SICHUAN] Baoxing County (Mts. Qionglai): 2 males, holotype & paratype, 3000 m, 20 km western Qiaoqi town, 55 km north of Baoxing, 8–10.VII.2003, S. Murzin leg. (MWM); Luding County (Moxi Town): 1 male and 1 female, 18.VII.2004, Min Wang & Liu-Sheng Chen leg. (SCAU); 1 male, 20.VII.2004, Min Wang & Liu-Sheng Chen leg. (SCAU); 1 male, 18.VI.2005, Guo-Hua Huang & Liu-Sheng Chen leg. (HUNAU); 1 male, 19.VII.2009, Min Wang & Guo-Hua Huang leg. (HUNAU); Kangding County: 1 male, 3200 m, 25.VI.1993 (MWM); Lushan County: 1 male, top of Mt. Xilingxueshan, 3200 m, 09.VII.2010, Gun Chen leg. (MWM).

Bionomics. The host is unknown. Adults appear from June to July.

Distribution. Mainland China (Sichuan).

Remarks. This species is only known from the Gonggashan area. All specimens were collected by light trapping.

XXI. *Mustilia* Walker, 1865 (FIGURES 38–41)

Mustilia Walker, 1865, *List Specimens lepid. Insects Colln Br. Mus.* 32: 580. Type species: *Mustilia falcipennis* Walker, 1865, by monotypy.

Diagnosis. Characterized by the following features: wings brown-ochre; forewing in male with complex patterns, apex strongly produced and hook-shaped; antemedial line arched; medial and postmedial lines wavy; oblique line present between postmedial line and apex; discal cell with a black spot; hindwing with slightly wavy medial and postmedial lines and discal cell with a spot; uncus broad and bifid; valva constricted at 2/3 length, apex narrow and blunt. Female similar to male but larger, paler with weaker pattern, and antenna filiform.

Distribution. Oriental Region.

Remarks. The genus currently consists of seven species, of which six are recorded from China (Map 21). When the larva is disturbed, the head and anterior part of thorax are retracted, an irregular-edged later flap is expanded and inflatable organ expanded to resemble an eye (Plate 10D–10G). Identification is sometimes difficult, but the shape of the uncus is diagnostic, so genital dissection is strongly recommended to confirm identification.

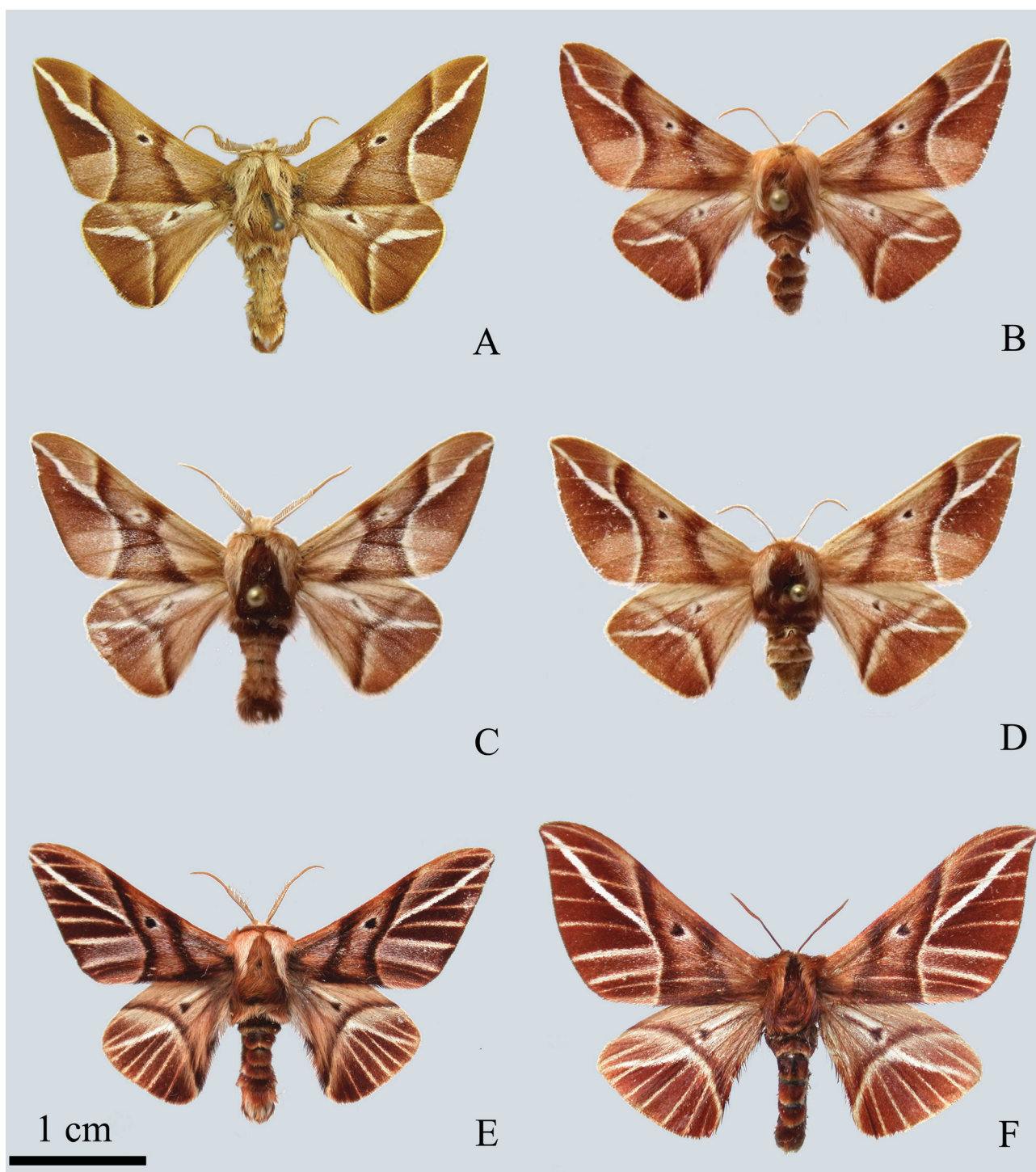


FIGURE 36. Adults of *Dalailama* spp. A. *D. bifurca*, male lectotype (Xizang); B. *D. bifurca*, female (Qinghai); C. *D. bifurca*, male (Qinghai); D. *D. bifurca*, female (Qinghai); E. *D. vadim*, male (Sichuan); F. *D. vadim*, female (Sichuan).

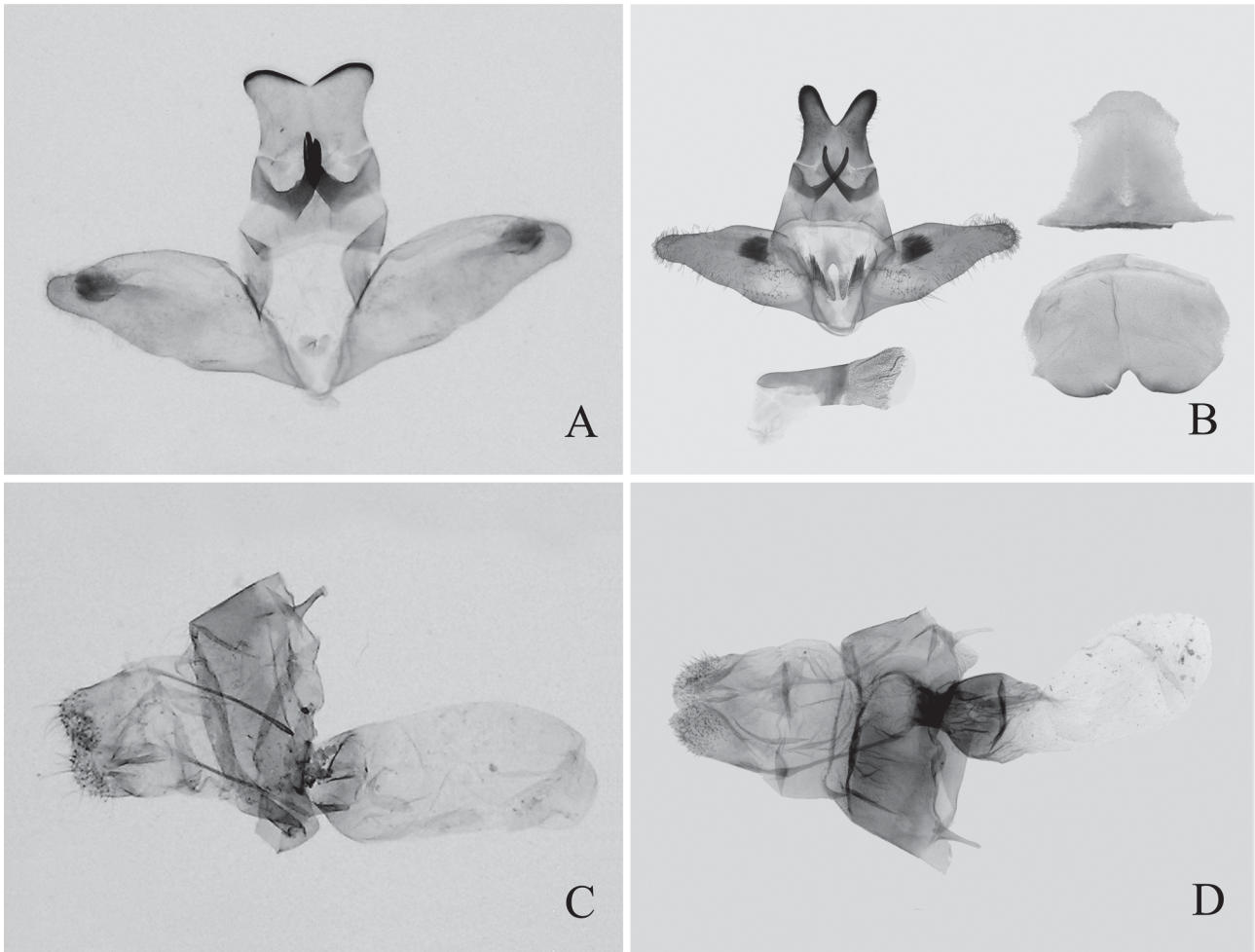
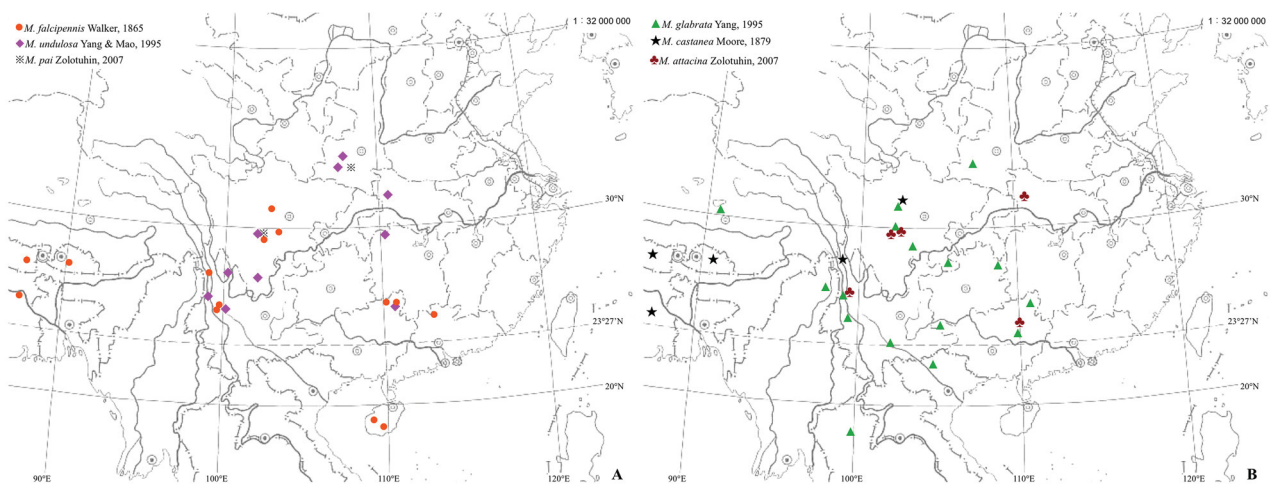


FIGURE 37. Genitalia of *Dalailama* spp. A. *D. bifurca*, male (Qinghai); B. *D. vadim*, male (Sichuan); C. *D. bifurca*, female (Qinghai); D. *D. vadim*, female (Sichuan).



Map 21. Distribution of *Mustilia* spp. mainly in China.

Key to the species of *Mustilia* in China

1. Forewing apex shortly falcate; fore- and hindwing tornus rounded 2
- Forewing apex strongly falcate, especially in males; fore- and hindwing tornus angled 3
2. Wings darker; hindwing with a spot near tornus *M. castanea*
- Wings paler; hindwing without a spot near tornus *M. undulosa*
3. Aedeagus apex swollen 4
- Aedeagus apex not swollen *M. attacina*
4. Uncus lobes broad 5
- Uncus lobes narrow *M. pai*
5. Distal part of gnathos lobes (beyond angle) 3/4 of tegumen width; aedeagus straight. *M. glabrata*
- Distal part of gnathos lobes (beyond angle) equal to tegumen width; aedeagus slightly curved *M. falcipennis*

65. *Mustilia falcipennis* Walker, 1865 (FIGURES 38A–38C, 40C)

Mustilia falcipennis Walker, 1865, *List Spec. lep. Ins. Brit. Mus.*, 32: 581. TL: [India] “Darjeeling”. Holotype: male (BMNH) [examined].

Diagnosis. Characterized by a forewing with the antemedial, medial and postmedial lines expanded on the costa into three spots and valva with rectangular base, abruptly narrowed apically, bearing sparse hairs.

Specimens examined. [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, 25.II.2003, Guo-Hua Huang leg. (SCAU); 1 male, 29–31.III.2003, Guo-Hua Huang leg. (SCAU); [GUANGXI] Xing’an County (Mao’ershan National NR): 3 males, 1.III.2003, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 25.VIII.2003, Guo-Hua Huang & Liu-Sheng Chen leg. (SCAU); 1 male, 13–20.VIII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU); Longsheng County (Huaping National NR): 1 male, 25.V.2007, Liu-Sheng Chen & Wei Xiong leg. (SCAU); [HAINAN] Ledong County (Jianfengling National NR): 1 male, 1.VII.2003, Min Wang & Guo-Hua Huang leg. (SCAU); Lingshui County (Diaoluoshan National NR): 1 male, 25.IV.2004, Min Wang & Guo-Hua Huang leg. (SCAU); [SICHUAN] Luding County (Hailuoguo National NR): 1 male, Mt. Gonggashan, 2.VIII.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 1 male, 5.VII.2004, Min Wang & Xiao-Ling Fan leg. (SCAU); 1 male, Moxi Town 15.VII.2009, Min Wang & Yang Long leg. (SCAU); Yingjing County: 1 male, Mt. Nibashan, 27.VII.2009, Guo-Hua Huang, Min Wang, Yang Long & Hou-Shuai Wang leg. (HUNAU); Wenchuang County (Wolong National NR): 2 males, Mt. Siguliangshan, 31°09’N, 103°20’E, July 2005, Siniaev & his team leg. (MWM); [YUNNAN] Gongshan County: 6 males, Dulongjiang River, 21.VII.2006, Min Wang & Xiao-Ling Fan leg. (SCAU); 1 male, Mt. Gongshan, 21–24.VII.2006, Min Wang & Xiao-Ling Fan leg. (SCAU); Yunlong County (Dali Bai Autonomous Prefecture): 3 males, 13 km north of Caojian town, Fengshuining Mts., 2460 m, 10–23.VI.1999, R. Brechlin leg. (MWM); 3 males, 20 km west of Dali city, 30.VIII.1998, 25°50’N, 99°17’E, 2570 m, local collector leg. (MWM); 2 males, 13 km north of Caojian town, Fengshuining Mts., 2460 m, 25.VIII–8.IX.1999, R. Brechlin leg. (MWM); 14 males, 13 km north of Caojian town, Fengshuining Mts., 25°46’N, 99°06’E, 2460 m, 10–20.V.1999, R. Brechlin leg. (MWM); 2 males, 100 km west of Dali city, near Caojian town, 2050 m, May 1998 (MWM).

Bionomics. *Symplocos lucida* (Thunb., 1835) (Symplocaceae) is reported as its larval host (Robinson, 2001). The mature larva is dark brown, speckled with minute yellow dots within each of which is a short seta (Lin, 2005). Pupation is in a small cocoon of tough brown silk spun amongst leaves (Holloway, 1987).

Distribution. Mainland China (Guangdong, Guangxi, Sichuan, Yunnan) and Hainan, India, Nepal, Bhutan.

Remarks. This species is widely distributed in the Sino-Himalayan Region.

66. *Mustilia glabrata* Yang, 1995 (FIGURES 38D–38E, 40D)

Mustilia glabrata Yang, 1995, *Guangxi Science* 2 (4): 37. TL: Guangxi, China.

Mustilia lobata Zolotuhin, 2007, **syn. nov.**, *Neue ent. Nachr.* 60: 189. TL: “Thailand, Changwat Chiang Mai, Doi Phahompok, 16 km NW of Fang, 2050 m”. Holotype: male (MWM) [examined].

Diagnosis. Allied to the type species, *M. falcipennis*, but can be distinguished easily by the antemedial and postmedial lines more sharply angled below the costa, the bipectinate part of the antenna less than half of its length and the uncus lobes shorter and wider.

Specimens examined. [GUIZHOU] Fanjingshan Mountain: 2 males (paratype of *lobata*), Jianghou, 1600 m, August 2002, Li et al. leg. (GU 2005-01, CAHU); [GIANGXI] Xilin County: 1 male (paratype of *lobata*), Doukongpo, 1700 m, July 2002, Li et al. leg. (GU 2005-05, CAHU); Xing'an County (Mao'ershan National NR): 2 males, 5.VIII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); 1 male, 18.VIII.2009, 1800 m, Min Wang & Hou-Shuai Wang leg. (SCAU); Jingxiu County (Dayaoshan National NR): 23 males and 1 female, 100 km southeast of Liuzhou city, 1200 m, 23°45'N, 109°45'E, 15–30.III.2005, V. Siniaev & his team leg. (MWM); [SICHUAN] Dayi County: 1 male (paratype of *lobata*), Xilingxueshan Mountain, 1300–2100 m, 29–31.VII.1998, S. Kasantsev leg. (ZMHU); Gulin County: 1 male (paratype of *lobata*), near west Guizhou border, Gaomushan Mountain, about 1900 m, July 2002, Ying et al. leg. (GU 2005-04, CAHU); Luding County (Moxi Town): 3 males, 15.VII.2009, Min Wang & Yang Long leg. (SCAU); 1 male, Mt. Erlangshan: road Ya'an to Kangding, 2100 m, 29°52' N, 102°18' E, 10–11.IV.2010, Saldaitis leg. (MWM); Lao Lin Kou: 3 males, 1900 m, 28°21'N, 103°26'E, 26.VI–12.VII.2008, Viktor Sinyaev leg. (MWM); Mts. Qionglai: 2 males, 1400 m, 31°13'N, 102°23'E, May 2006, Siniaev & his team leg. (MWM); [SHAANXI] Mts. Tsinling (Qinling): 1 male, 1500 m, 33°50'N, 107°44'E, April 2005, Siniaev & his team leg. (MWM); [YUNNAN] Yunlong County: 1 male (paratype of *lobata*), Fengshuiling Mountain, 13 km N Caojian, 2460 m, 20.V–9.VI.1999, R. Brechlin leg. (MWM); Changning County: 1 male (paratype of *lobata*), Songzhishanding, 2875 m, June 2000, local collector leg. (MWM); Mojiang County: 1 male (paratype of *lobata*), Dajishan Mountain, 2500 m, March 2001, local collector leg. (GU 2005-02, CAHU); [XIZANG] Linzhou County: 1 male (paratype of *lobata*), Tibet, Tangmai, 2200 m, 1–5.VII.1996, Paulus leg. (CMSW).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Guizhou, Guangxi, Sichuan, Shaanxi, Yunnan, Xizang), northern Thailand, northern Vietnam, northern Myanmar.

Remarks. All specimens were collected by light trapping from summer to winter (Zolotuhin, 2007).

67. *Mustilia castanea* Moore, 1879 (FIGURES 38F–38H)

Mustilia castanea Moore, 1879, in Hewitson & Moore, *Lep. Atkinson*: 82. TL: [Darjeeling, India] “Darjiling”. Holotype: male (ZMHU) [examined].

Diagnosis. Very similar to *M. undulosa*, but can be distinguished by the following characters: forewings darker; hindwing with a spot near tornus.

Specimens examined. [SICHUAN] 1 male and 1 female, road from Songpan to Jiuzhaigou, 2600 m, 33°12' N, 103°44' E, 13.VII.2010, Floriani & Saldaitis leg. (MWM); [YUNNAN] Deqin County (Mt. Meilixueshan): 1 male, 15.VIII.2002, Ming-Yi Tian leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Sichuan, Yunnan), Bhutan, Nepal, India.

Remarks. The species usually co-occurs with *M. falcipennis* but commonly flies at higher altitudes. This species is here recorded from China for the first time.

68. *Mustilia undulosa* Yang & Mao, 1995 (FIGURES 39A–39F, 41A–41F)

Mustilia undulosa Yang & Mao, 1995, *Journal of Hubei University (Natural Science)* 17(4): 427. TL: Hubei, China.

Mustilia falcipennis: Chu & Wang, 1993, *Sinozoologia*, 10: 235; Chu & Wang, 1996, *Fauna Sinica Insecta*, 5: 44. Misidentification, commented on by Zolotuhin (2007).

Mustilia sabriformis Zolotuhin, 2007, **syn. nov.**, *Neue ent. Nachr.* 60: 190. TL: “China, Yunnan (NW), Dali Bai aut. Pref., Yunlong county, Fengshuiling Mts, 2460 m”. Holotype: male (MWM) [examined].

Diagnosis. Can be distinguished from the other species by the following characters: forewing apex shortly falcate; postmedial line edged with paler white; uncus narrow, with lobes slender.

Specimens examined. [HUBEI] Shenlongjia Forest District (Shenlongjia National NR): 2 males, 8–11.VII.2009, Min Wang & Yang Long leg. (SCAU); [HUNAN] Sangzhi County (Badagongshan National NR, Mt. Tianpingshan): 5 males, 13–14.VIII.2014, Guo-Hua Huang & Min Wang leg. (HUNAU); [GUANGXI] Xing'an County (Mao'ershan National NR): 1 male, 25.VIII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); 2 males,

13–20.VIII.2009, Min Wang & Hou-Shuai Wang leg. (SCAU); [SHAANXI] Taibai County: 3 males (paratypes of *sabriliformis*), Süd-Shensi, 1700 m, 26.VI.1936, H. Höne leg. (ZFMK); Ningshan County: 1 male, Houditang Town, 14.VII.2006, Liu-Sheng Chen & Wei Xiong leg. (SCAU). [SICHUAN] Mianning County: 1 male (paratype of *sabriliformis*), Daxueshan Mountain, 28°34'N, 102°00'E, 2750 m, 7–8.VII.1999, V. Sinjaev & E. Plutenko leg. (MWM); Luding County: 3 males (paratypes of *sabriliformis*), Erlangshan Mountain, E Luding County, 2560 m, 19–23.VII.2004, S. Murzin leg. (MWM); 1 male, Moxi Town, Hailuoguo National NR, 20.VII.2004, Min Wang leg. (SCAU); 1 male, 30.VII.2003, Min Wang & Liu-Sheng Chen leg. (SCAU); 1 female, Moxi Town, 18.VI.2005, Guo-Hua Huang, Liu-Sheng Chen & Jing-Xian Liu leg. (HUNAU); [YUNNAN] Yunlong County: 1 male (holotype of *sabriliformis*), Fengshuiling Mountain, 13 km N of Caojian, 25°46'N, 99°06'E, 2460 m, 10–20.V.1999, R. Brechlin leg. (MWM); 7 males (paratypes of *sabriliformis*), the same data (MWM); 1 male (paratype of *sabriliformis*), the same data except 20.V–9.VI.1999 (GU-7930, MWM); 2 males (paratypes of *sabriliformis*), the same data except 25.VII–8.VIII.1999 (MWM); 1 male (paratype of *sabriliformis*), 20 km Dali city, 2570 m, 30.VIII.1998, R. Brechlin leg. (MWM); 1 male (paratype of *sabriliformis*), 13 km N Caojian, Fengshuiling Mountain, 2460 m, 10–23.VI.1999 (MWM); Lijiang City (Lugu Lake): 2 males, 13.VIII.2008, Min Wang leg. (SCAU); 3 males, env. Bailakou Pass, 3400–3600 m, 28.V–7.VI.2006, Murzin leg. (MWM); Diancangshan Mountain, 1 female (paratype of *sabriliformis*), 25°41'N, 100°05'E, 15–30.VII.2004, V. Sinjaev & his team leg. (MWM).

Bionomics. The larval host is unknown. The adults are on the wing in July and August (Plate 10H).

Distribution. Mainland China (Hubei, Hunan, Guangxi, Shaanxi, Sichuan, Yunnan).

Remarks. The species has been largely overlooked until now.

69. *Mustilia attacina* Zolotuhin, 2007 (FIGURES 39G–39H, 40E)

Mustilia attacina Zolotuhin, 2007, *Neue ent. Nachr.* 60: 190. TL: “China, Sichuan, Gongga Shan, 2600–3200 m”. Holotype: male (MWM) [examined].

Diagnosis. Can be distinguished from the other species by the following characters: ground color of wings yellow with venation darker and very clear; uncus bifid with acute lobes.

Specimens examined. [HUBEI] Shenlongjia Forest District (Shenlongjia National NR): 1 male, 8–11.VII.2009, Min Wang & Yang Long leg. (SCAU); [SICHUAN] Luding County: 1 male (holotype), Gonggashan Mountain, 29°41' N, 101°58' E, 2600–3200 m, 23.IV–15.V.2001, V. Sinjaev & E. Plutenko leg. (MWM); 1 male (paratype), the same data (MWM); 1 male, Mts. Erlangshan, road Ya'an to Kangding, 2100 m, 29°52' N, 102°18' E, 10–11.IV.2010, Saldaitis leg. (MWM); Baoxing County: 1 male (paratype), Mt. Qionghuan, 3000 m, 20 km W Qiaopi town, 8–10.VII.2003, S. Murzin leg. (MWM); [YUNNAN] A-tun-tse: 2 males (paratypes), Obere Höhe, 4500 m, 9.VII.1936 & 17.VI.1937, H. Höne leg. (MWM); 1 male (paratype), Talsohle, 3000 m, 4.VII.1937, H. Höne leg. (ZFMK).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Hubei, Guangxi, Sichuan, Yunnan).

Remarks. This species is endemic to China.

70. *Mustilia pai* Zolotuhin, 2007 (FIGURES 40A–40B, 40F)

Mustilia pai Zolotuhin, 2007, *Neue ent. Nachr.*, 60: 191. TL: [Shaanxi, China] “China, Tapaishan im Tsinling, Süd-Shensi”. Holotype: male (ZFMK) [examined].

Diagnosis. Can be distinguished from the other species by the forewing strongly falcate apex, a clearly delineated dark crescent pattern on the outer margin below the apex and the juxta with a pair of elongate processes.

Specimens examined. [SHANNXI] Taibai County: 1 male (holotype), Tapaishan im Tsinling, Süd-Shensi, 26.VI.1935, H. Höne leg. (GU BMB-019, ZFMK); [SICHUAN] Luding County (Mt. Gonggashan): 1 male, 2.VIII.2003, Min Wang & Liu-Sheng Chen leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Shaanxi, Sichuan).

Remarks. This species is endemic to China.

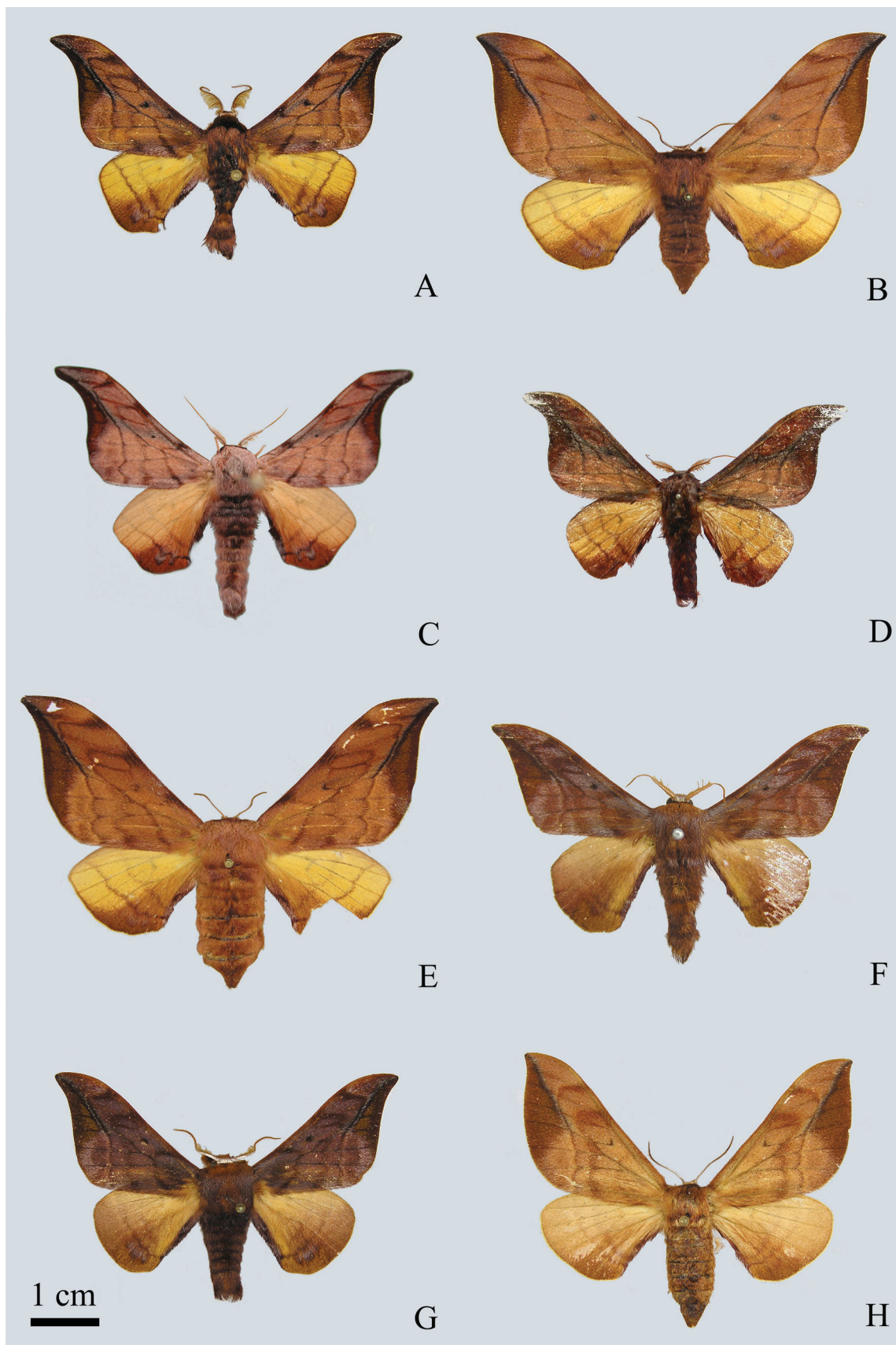


FIGURE 38. Adults of *Mustilia* spp. A. *M. falcipennis*, male (Nepal); B. *M. falcipennis*, female (Nepal); C. *M. falcipennis*, male (Guangdong); D. *M. glabrata*, male (Sichuan); E. *M. glabrata*, female (Thailand); F. *M. castanea*, male (India), holotype; G. *M. castanea*, male (Nepal); H. *M. castanea*, female (Nepal)

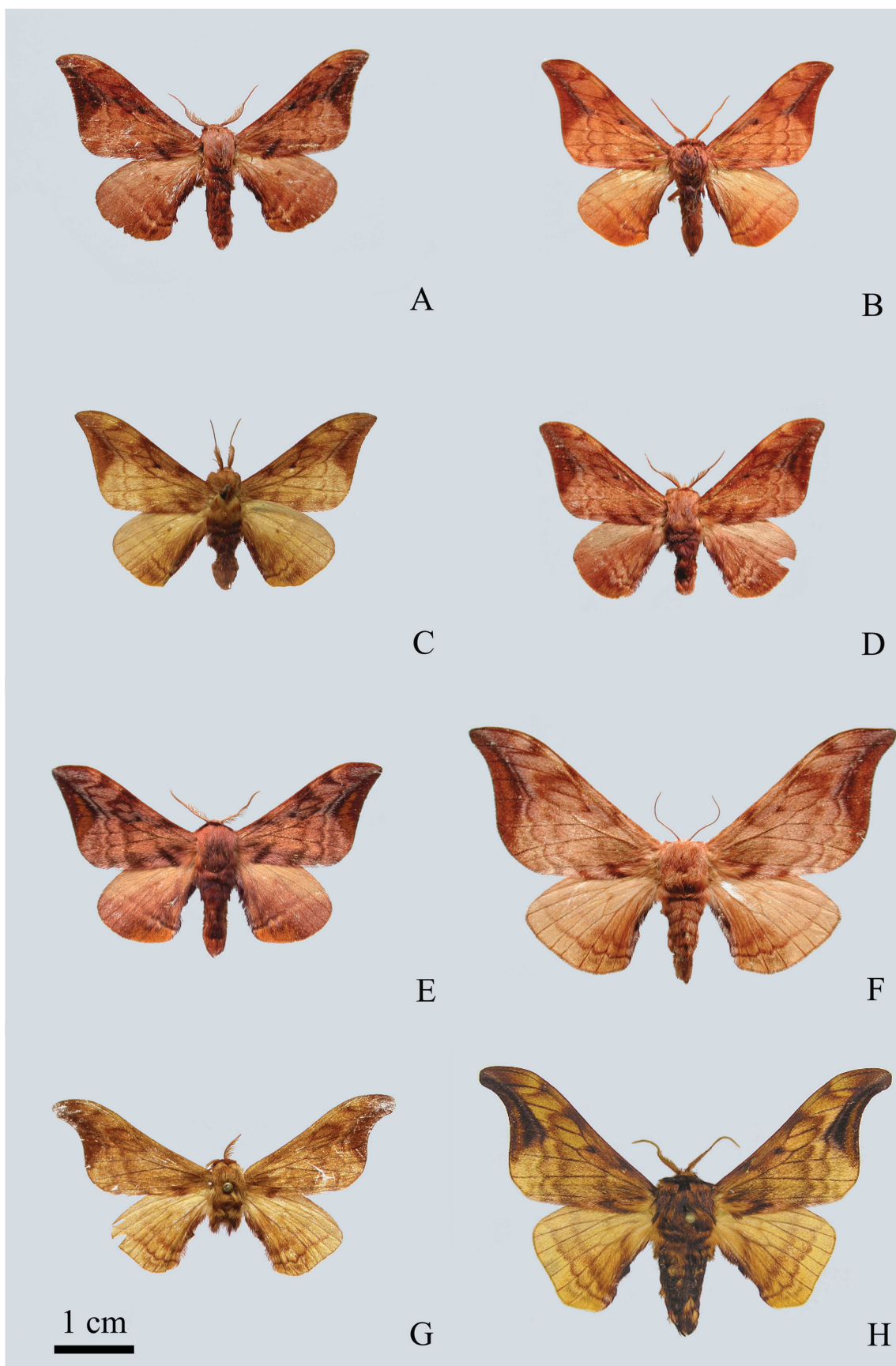


FIGURE 39. Adults of *Mustilia* spp. A. *M. undulosa*, male (Hubei); B. *M. undulosa*, male (Yunnan); C. *M. undulosa*, male (Guangxi); D. *M. undulosa*, male (Shaanxi); E. *M. undulosa*, male (Sichuan); F. *M. undulosa*, female (Sichuan); G. *M. attacina*, male (Hubei); H. *M. attacina*, male (Sichuan), holotype.

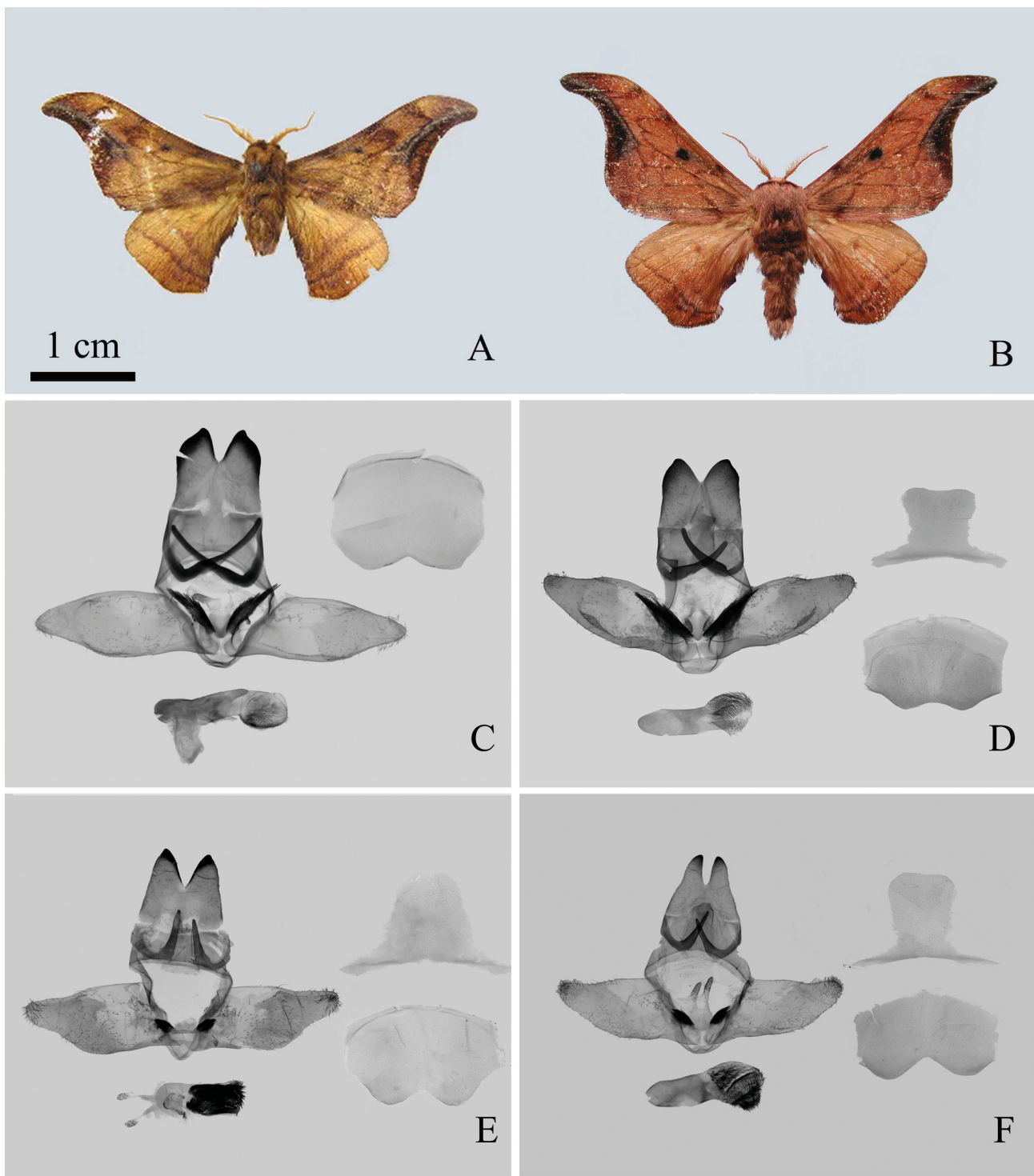


FIGURE 40. Adults and male genitalia of *Mustilia* spp. A. *M. pai*, male (Shaanxi), holotype; B. *M. pai*, male (Sichuan); C. *M. falcipennis*, male genitalia (Guangdong); D. *M. glabrata*, male genitalia (Sichuan); E. *M. attacina*, male genitalia (Hubei); F. *M. pai*, male genitalia (Sichuan).

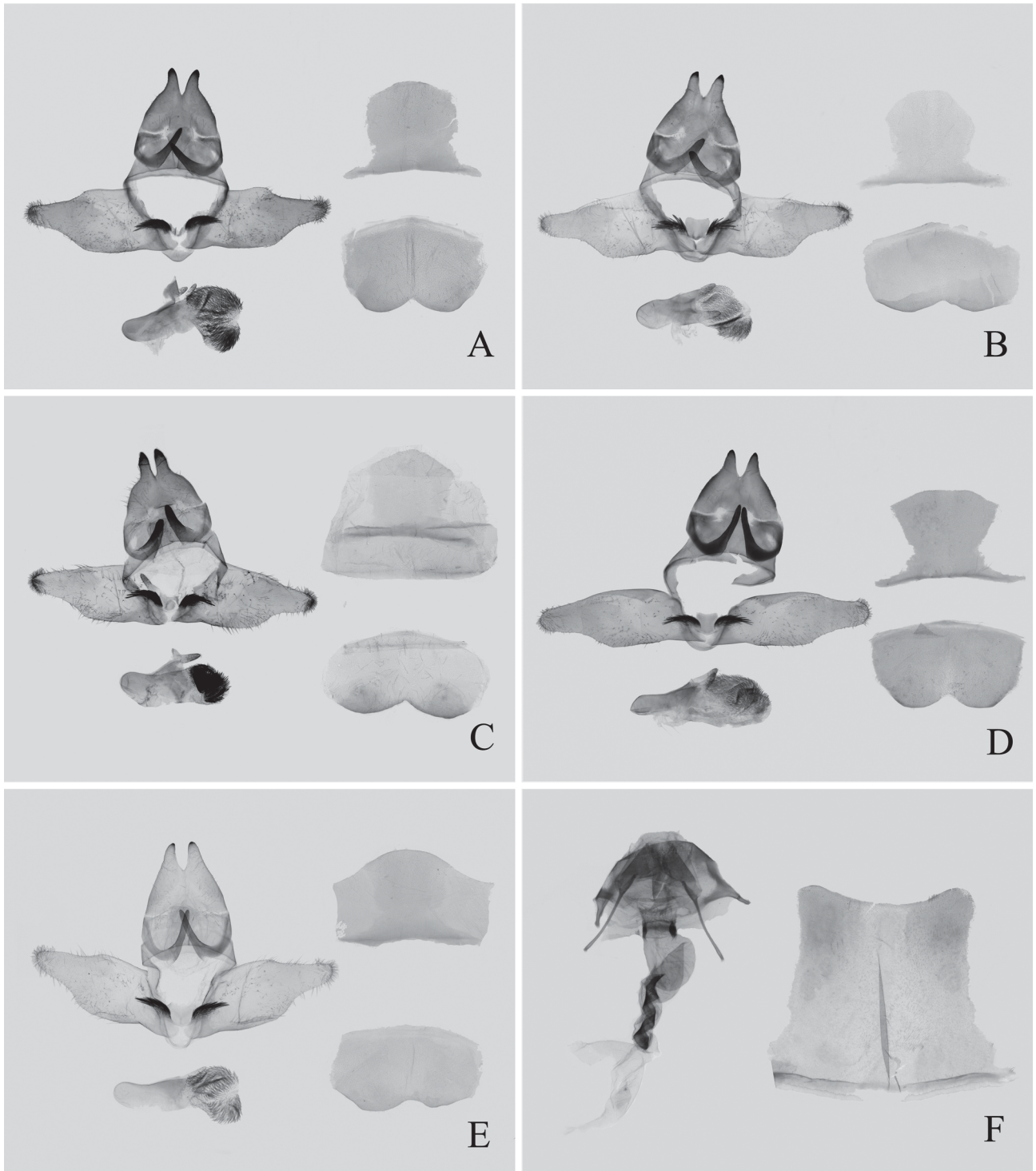


FIGURE 41. Genitalia of *Mustilia* spp. A. *M. undulosa*, male (Yunnan); B. *M. undulosa*, male (Guangxi); C. *M. undulosa*, male (Hubei); D. *M. undulosa*, male (Shaanxi); E. *M. undulosa*, male (Sichuan); F. *M. undulosa*, female (Sichuan).

Subfamily Prismostictinae Forbes, 1955

Diagnosis. Subfamily Prismostictinae is characterized by the adult with setae around eyes and pectinate antennae. Transparent or white windows on the forewings are typical for most species. Minet (1994) divided this subfamily into two tribes, Prismostictini and Oberthueriini, but because these are quite distinct and form distinct clusters in DNA analyses, we here treat them as subfamilies. The larvae feed on Symplocaceae (Holloway, 1987; Sugi *et al.*, 1987; Chang, 1989). Miyata (1970) reported that the morphology of the larvae of this subfamily changed with the environmental conditions.

Distribution. South and eastern Palaearctic and Indo-Oriental Region.

Remarks. Subfamily Prismostictinae is endemic to Asia. In the male genitalia, the following features are typical for Prismostictinae: valva flattened; uncus bilobed and often modified; and saccus reduced. The larvae typically have long secondary setae and a slender thorax, and a horn is developed on abdominal segment 8 in some genera.

Key to the genera of Prismostictinae in China

1. Forewing apex with a transparent triangular spot 2
- Forewing apex without a transparent triangular spot *Theophoba* Fletcher & Nye
2. Forewing with postmedial line broad, oblique, “7”-shaped; submarginal line yellow embedded in a broad dark yellow band
..... *Prismostictoides* Zolotuhin & Tran
- Forewing with postmedial line thin, slightly wavy; submarginal line black edged with pale yellow or dark gray .3
3. Wings yellow-ocher or red-ocher; discal cell with a black spot *Prismosticta* Butler
- Wings dark gray; discal cell with a pale gray crescent-shaped spot *Sesquiluna* Forbes

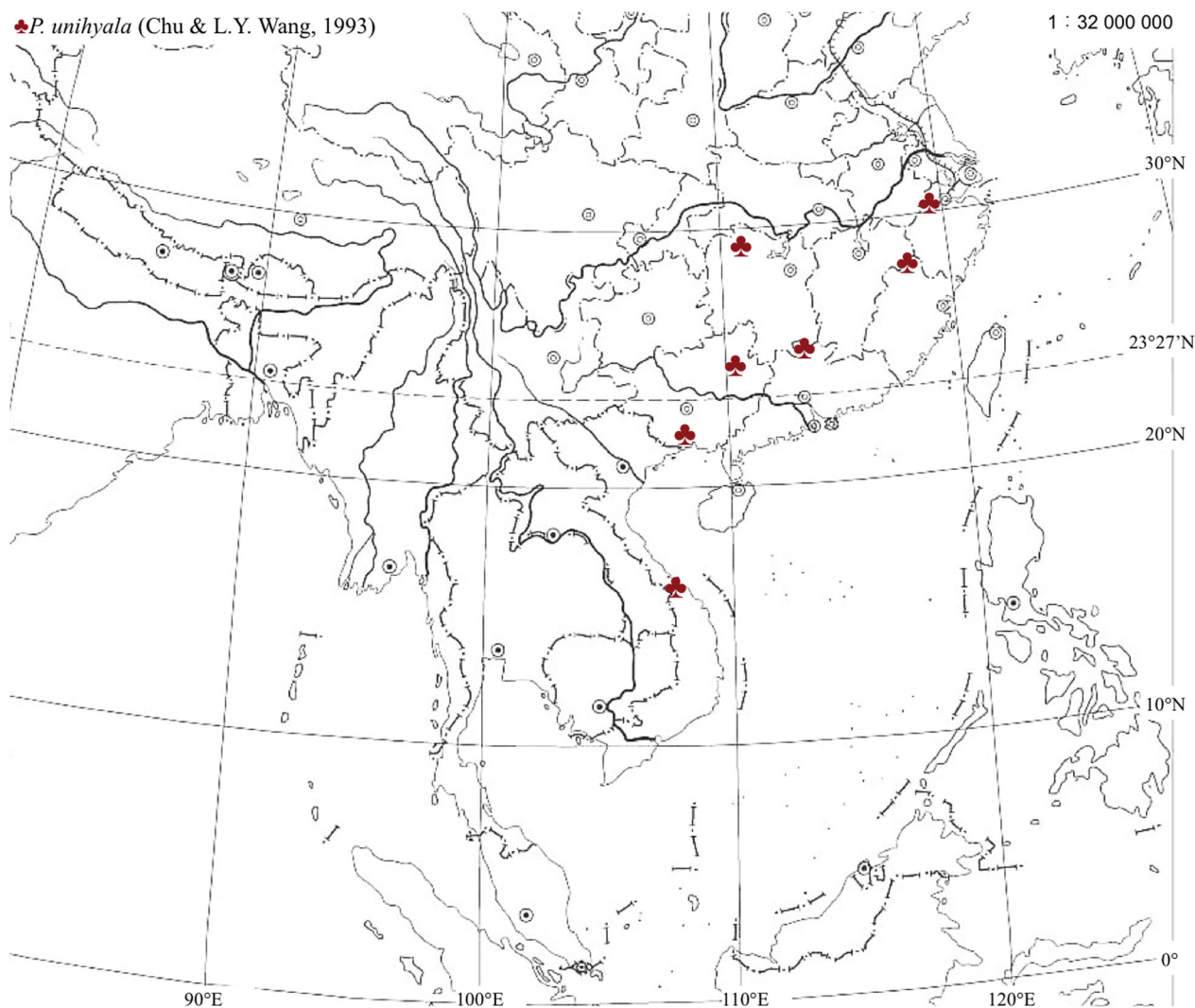
XXII. *Prismostictoides* Zolotuhin & Tran, 2011 (FIGURE 42)

Prismostictoides Zolotuhin & Tran 2011, *Tinea* 21 (4): 180. Type species: *Prismosticta unihyala* Chu & Wang, 1993, by original designation.

Diagnosis. Characterized based by the following features: antenna bipectinate; forewing with a triangular transparent spot near apex; submarginal line thin, yellow, in a wide yellow dark band; vein CuP visible as a pale line, 1A and 2A basally separate; hindwing with Rs and M1 long-stalked; uncus strongly bifid, the lobes hook-shaped; valvae asymmetrical, right cucullus with numerous long hairs, left cucullus with an apically spinose, tonguelike structure; sacculus with a ventral odontoid process.

Distribution. China, Vietnam.

Remarks. This genus was established by Zolotuhin & Tran (2011) and designated the type species as “*Prismosticta unihyala* Zhu & Wang, 1995, *Acta zool. sin.*: 240”. However, the year and journal they cited are incorrect as *P. unihyala* was described two previously in 1993, in *Sinozoologica* (Chu & Wang, 1993). At present, the genus includes only a single species distributed in China (Map 22) and Vietnam.



Map 22. Distribution of *Prismostictoides unihyala* (Chu & Wang, 1993) mainly in China.

71. *Prismostictoides unihyala* (Chu & Wang, L.Y., 1993) (FIGURES 42A–42D)

Prismosticta unihyala Chu & Wang, L.Y., 1993, *Sinozool.* 10: 240. TL: Fujian, China. Holotype: male (IZCAS) [examined].

Prismosticta unihyala Chu & Wang, L.Y.: Chu & Wang, L.Y., 1996, *Fauna Sinica Insecta* 5: 54.

Prismostictoides unihyala (Zhu & Wang, L.Y., 1996): Zolotuhin & Tran, 2011, *Tinea* 21 (4): 182.

Diagnosis. Characterized, in addition to the generic characters given above, by a forewing with a sharp apex and teeth on the outer margin.

Specimens examined. [ZHEJIANG] Lin'an County (Qingliangfeng NR): 1 male, 27.VII.2011, Xing Wang & Yuan-Yuan Liu leg. (HUNAU); 1 male, Chekiang (Zhejiang), West-Tien-Mu-Shan (Xitianmushan National NR), 3.VI.1932, H. Höne leg. (ZFMK); [JIANGXI] Guixi County (Yingtian City): 1 male, Mts. Wuyishan, Jiangxi/Fujian border, Xipaihejia village, 1500 m, 27°54'N, 117°20'E, June 2005, Siniaev & his team leg. (MWM); 22 males, Jiangxi-Fujian border, 50 km southeast of Yingtian, 1600 m, 27°55'N, 117°25'E, May 2002, Siniaev & local collector leg. (MWM); [FUJIAN] Wuyishan City (Wuyishan National NR): 2 males, 18.VI.2008, Yang Long leg. (SCAU); [HUNAN] Sangzhi County (Badagongshan National NR): 9 males, 25–30.IV.2006, Lui-Sheng Chen, Min Wang & Wei Xiong leg. (SCAU); 1 male, 26.V.2009, Guo-Hua Huang leg. (HUNAU); [GUANGDONG] Ruyuan County (Nanling National NR): 3 males, 20.VI.2004, Lui-Sheng Chen & Hong Lin leg. (SCAU); 5 males, 7.VI.2008, Min Wang & Hou-Shuai Wang leg. (SCAU); 3 males, 25.VI.2008, Hou-Shuai Wang & Yang Long leg.

(SCAU); 8 males, 8.V.2009, Zhu Zhang & Pei-Ming Xu leg. (SCAU); 7 males, 17.V.2008, Hou-Shuai Wang leg. (SCAU); 1 female, 700–1200 m, 20–24.II.2003, Mamoru Owada leg. (NSMT)”; [GUANGXI] Fangchenggang City (Shiwandashan National NR): 3 males, Mt. Pinglongshan, Milv Village, 6.X.2002, Guo-Hua Huang leg. (SCAU); Xing’an County (Mao’ershan National NR): 5 males, 1.VII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); 7 males, 31.V.2008, Lui-Sheng Chen, Min Wang & Hou-Shuai Wang leg. (SCAU).

Bionomics. The known larval hosts are *Ficus microcarpa* Linn., 1781 and *Morus alba* Linn., 1753 (both Moraceae).

Distribution. Mainland China (Zhejiang, Jiangxi, Fujian, Hunan, Guangdong, Guangxi), Vietnam.

Remarks. This species was described based on two male specimens collected from Mt. Wuyishan, Fujian province, China (Chu & Wang, 1993). Externally, the species looks superficially similar to *Prismosticta fenestrata*, the type species of *Prismosticta*, in having a subapical triangular white hyaline spot on the forewing, but can be distinguished from the latter by the forewing outer margin produced as a broad lobe at the apex of vein M3.

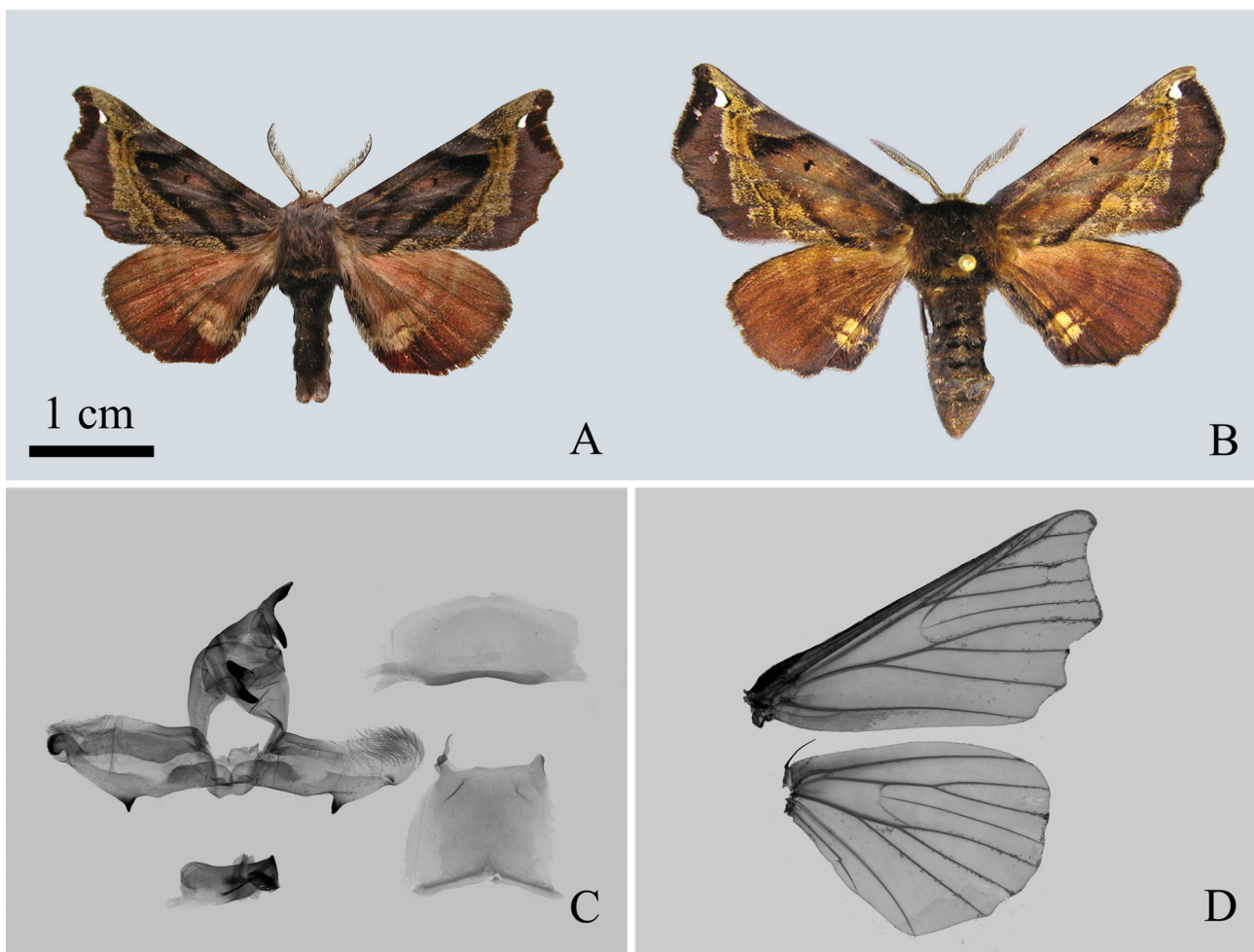


FIGURE 42. Adults, wing venation and male genitalia of *Prismostictoides unihyala*. A. Male (Guangdong); B. Female (Guangdong); C. Male genitalia (Guangdong); D. Wing venation (Guangdong).

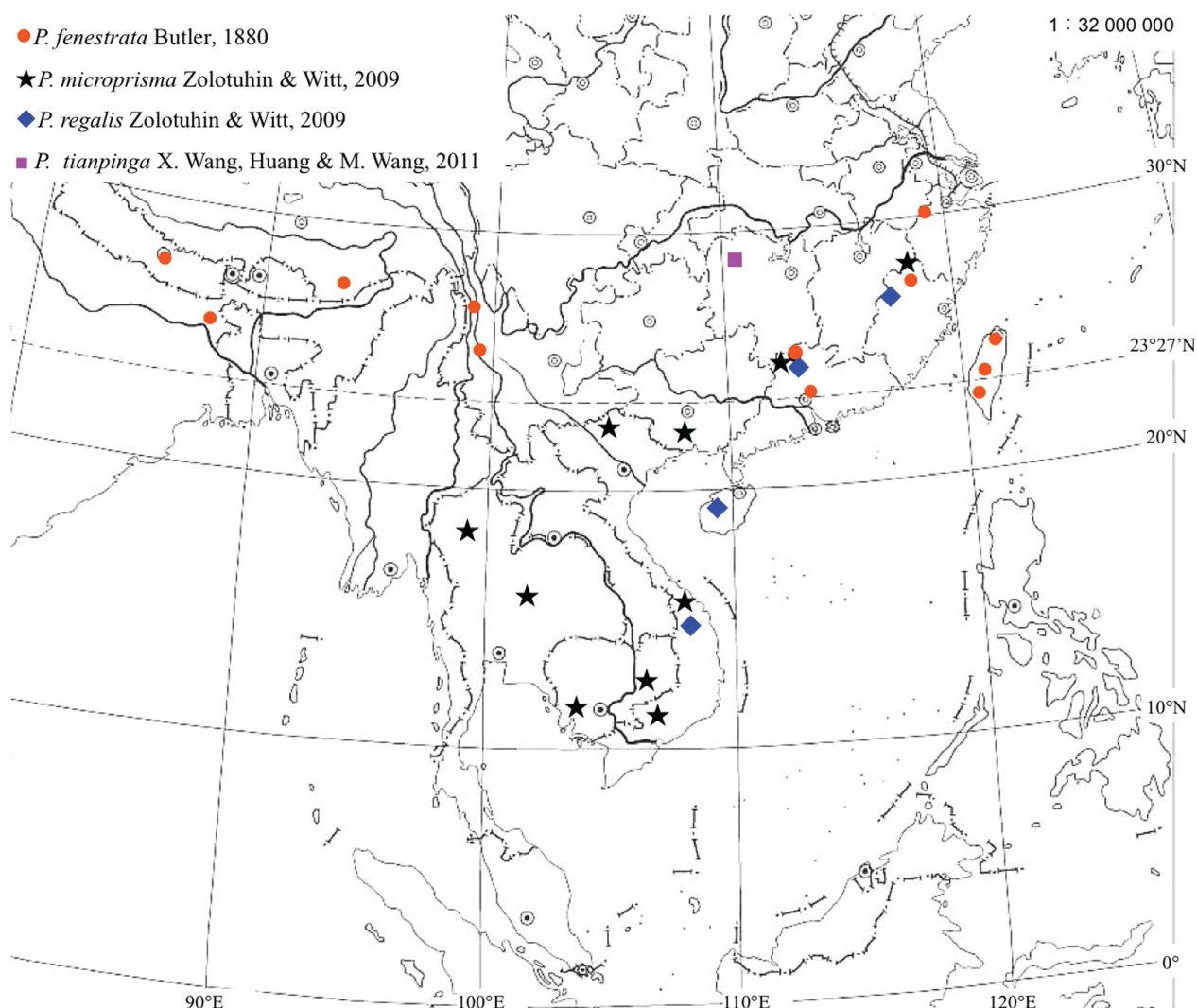
XXIII. *Prismosticta* Butler, 1880 (FIGURES 43–44)

Prismosticta Butler, 1880, *Ann. Mag. nat. Hist.* 6(5): 67. Type species: *Prismosticta fenestrata* Butler, 1880, by original designation.

Diagnosis. Very similar to *Prismostictoides*, but can be distinguished based by the following features: forewing with outer margin more smoother; trangular transparent spot near apex larger; uncus shallowly bifid with short finger-shaped or short tooth-shaped lobes; gnathos strongly sclerotized, medial lobe smooth or spinulose; valva symmetrical with blunt apex; aedeagus curved; vesica helical, with a single hook-like cornutus.

Distribution. China, Japan, Vietnam, Indonesia, Malaysia, Myanmar, Cambodia, Thailand, India.

Remarks. At present, the genus consists of six species (Holloway, 1987; Chu & Wang, 1993, 1996; Zolotuhin & Witt, 2009; Wang *et al.*, 2011), distributed in Asia. Four *Prismosticta* species are here recorded from China (Map 23).



Map 23. Distribution of *Prismosticta* spp. mainly in China

Key to the species of *Prismosticta* in China

1. Forewing with a small approximately equilateral triangular transparent spot near apex; submarginal line arched, curved inwards near costa2
- Forewing with large isosceles triangular transparent spot near apex; submarginal line wavy or arched, extending to the triangular transparent spot.3
2. Uncus bifid, both lobes apically tapered; harpe tongue-shaped *P. fenestrata*
- Uncus bifid, each lobe shallowly bifid forming four small teeth; valva with a basal long, thin, sharply pointed process; harpe apically bifid *P. microprisma*
3. Wings red-ocher; valva basally with a long, serrated tooth-shaped process *P. regalis*
- Wings ochre-green with a metallic luster; valva basally with a sheet-like process. *P. tianpinga*

72. *Prismosticta fenestrata* Butler, 1880 (FIGURES 43A–43E, 44B, 44G)

Prismosticta fenestrata Butler, 1880, *Ann. Mag. nat. Hist.* 6 (5): 68. TL: [Darjeeling, India] “Darjeeling”. Holotype: female (BMNH) [examined].

Prismosticta sinica Yang, 1995, *Insects of Baishanzu Mountain, Eastern China*: 353. TL: Zhejiang, China. Synonymized by Kishida & Wang, X., 2011.

Diagnosis. This species can be distinguished by the ocher-yellow forewing with a small triangular transparent spot near apex and the gnathos medially with a narrow spinulose process.

Specimens examined. [TAIWAN] Taichung County: 1 male, Anmashan, lower forest zone, 1660 m, 20.VI.1997 (MWM); Yilan County (Fushan Botanic Garden, 750 m): 1 male, 25.II.2010, Shipher Wu leg. (TFRI); 1 male, 12.XI.2010, Shipher Wu leg. (TFRI); 1 male, 23.IV.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, 9.I.2012, Shipher Wu leg. (TFRI); 1 male, 7.X.2012, Shipher Wu leg. (TFRI); Yilan County (Siyuanyako): 1 female, 2.VI.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); Hualien County: 1 male, Dayuling, 19.VII.2012, Shipher Wu & Wei-Chun Chang leg. (TFRI); 1 male, Ci'en, 1950 m, 13.IX.2012, Shipher Wu leg. (TFRI); Miaoli County: 1 male, Guanwu, 2000 m, 27.IX.2010, Shipher Wu leg. (TFRI); 1 male, Guanwu, 2000 m, 29.VI.2011, Shipher Wu & Wei-Chun Chang leg. (TFRI); 104 males from different counties of Taiwan (Taitung, Taoyuan, Ping-Tung, Kaoshiung, Ilan, Taipei, Hualien, Nantou, Miaoli) (MWM); [GUANDDONG] Huizhou County (Nankunshan Provincial NR): 1 male, 24.VII.2005, Min Wang & Liu-Sheng Chen leg. (SCAU); Ruyuan County (Nanling National NR): 1 male, 7.VII.2008, Min Wang & Hou-Shuai Wang leg. (SCAU); [YUNNAN] Fugong County (Nujiang Lisu Autonomous Prefecture): 1 male, Lichadi (=Walo), 42 km N of Fugong, 1390 m, 12–16.V.1999, 27°15'N, 98°55'E, R. Brechlin leg. (MWM); Yunlong County (Dali Bai Autonomous Prefecture): 1 male, 13 km north of Caojian town, Fengshuining Mts., 25°46'N, 99°06'E, 2460 m, 20–30.VI.1999, local collector leg. (MWM).

Bionomics. In Taiwan, the larvae feed on several *Symplocos* species (Symplocaceae). The adults are on the wing throughout the year, at the elevations from 400–2100 m (Plate 11A–11C). There are apparently several generations a year (adults known from January to November). The larva is grayish-brown, with a long anal horn (Plate 11D).

Distribution. Mainland China (Zhejiang, Fujian, Guangdong, Yunan, Xizang) and Taiwan, Nepal, India.

Remarks. The specimens from Zhejiang, Fujian and Yunnan Provinces in China were misidentified by Chu & Wang (1993) as *P. hyalinata* Butler, 1885, which is endemic to Japan. Its fully-grown larva was originally identified as *Andraca bipunctata* Walker, 1865 and described by Sevastopulo (1939).

73. *Prismosticta regalis* Zolotuhin & Witt, 2009 (FIGURES 43F–43G, 44C–44D & 44H)

Prismosticta regalis Zolotuhin & Witt, 2009, *Entomofauna*, suppl.16: 252. TL: China “Kuatun, Prov. Fukien”. Holotype: male (ZFMK) [examined].

Diagnosis. This species is characterized by the red-ocher wings, a forewing with a large triangular transparent spot near the apex, distinct antemedial and submarginal lines, obscure medial and postmedial lines; a short and robust uncus, with two short triangular lobes; and a broad, spinulose gnathos.

Specimens examined. [FUJIAN] Jianning County: 1 male, Holotype deposited in ZFMK; [GUANGDONG] Ruyuan County (Nanling National NR): 2 male, 7.VI.2008, Min Wang & Hou-Shuai Wang leg. (SCAU); 1 male, 29.III.2003, Min Wang & Guo-Hua Huang leg. (SCAU); 2 males, 18.VIII.2003, Guo-Hua Huang & De-Yu Xin leg. (SCAU); 1 male, 26.IX.2003, Min Wang & Guo-Hua Huang leg. (SCAU); 1 male, 22–25.VII.2004, Liu-Sheng Chen leg. (SCAU); 1 male, 23.VII.2005, Liu-Sheng Chen leg. (SCAU); 1 male, 18–19.IX.2006, Liu-Sheng Chen & Min Wang leg. (SCAU); 1 male, 29.VII.2008, Liu-Sheng Chen & Hou-Shuai Wang leg. (SCAU); 1 male, 10.VIII.2009, Hou-Shuai Wang leg. (SCAU); [HAINAN] Ledong County (Jianfengling National NR): 3 males, 12.IV.2009, Min Wang leg. (SCAU); 1 male, 29.XI.2003, Min Wang & Guo-Hua Huang leg. (SCAU); Lingshui County (Diaoluoshan National NR): 2 males, 24.V.2004, Min Wang & Guo-Hua Huang leg. (SCAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Fujian, Guangdong) and Hainan, Vietnam.

Remarks. This species is widely distributed in southern China and northern Vietnam.

74. *Prismosticta tianpinga* Wang, X., Huang & Wang, M., 2011 (FIGURES 43H, 44E)

Prismosticta tianpinga Wang, X., Huang & Wang, M., 2011, *Zootaxa* 2895: 67. TL: Mt. Tianpingshan, Badagongshan National NR, Sangzhi County, Hunan Province, China". Holotype: male (SCAU) [examined].

Diagnosis. This species is characterized by the ochre green wings with a metallic luster, a forewing with a larger triangular transparent spot near the apex, and obscure antemedial, medial and postmedial lines.

Specimens examined. [HUNAN] Sangzhi County (Badagongshan National NR): 1 male, holotype deposited in SCAU with the label "Mt. Tianpingshan, Badagongshan National NR, Sangzhi County, Hunan Province, China, 14.V.2007, Liu-Sheng Chen, Zhen Li and Yang Long leg."; 1 male, paratype same to the holotype except 6.V.2009, Guo-Hua Huang leg. (HUNAU); 1 male, 20.V.2010, Chun-Lin Liao leg. (HUNAU).

Bionomics. The larval host is unknown.

Distribution. Mainland China (Hunan).

Remarks. This species is apparently endemic to Hunan Province in China.

75. *Prismosticta micropisma* Zolotuhin & Witt, 2009 (FIGURES 44A, 44F)

Prismosticta micropisma Zolotuhin & Witt, 2009, *Entomofauna*, 16: 251. TL: "N. Vietnam, 200 m, Ben En Nat. Park, 40 km SW Than Hoa". Holotype: male (MWM) [examined].

Diagnosis. This species can be distinguished from the other *Prismosticta* species by the following characters: forewing with antemedial and medial lines obscure, postmedial and submarginal lines arched; discal cell with a rectangular black spot, inside of costa red; uncus bifid, each lobe shallowly bifid forming four small teeth.

Specimens examined. [FUJIAN] Wuyishan County (Wuyishan National NR): 1 male, 600 m, 18.VIII.1991, Martini leg. (MWM); [GUANGDONG] Ruyuan County (Nanling National NR): 1 male, 7.V.2009, Min Wang leg. (SCAU); [GUANGXI] Fangchenggang City (Shiwandashan National NR): 2 males, Mt. Pinglongshan, Milv Village, 6.IV.2002, Guo-Hua Huang & Min Wang leg. (SCAU).

Bionomics. *Symplocos chinensis* (Lour.) Druce, 1917 (Symplocaceae) is the recorded larval host in China by Chu & Wang L.Y. (1993), who reported the species *Prismosticta micropisma* as a misidentification of the species *P. tiretta* Swinhoe, 1903 in their paper. Zolotuhin & Tran (2011) recorded the *Eurya* sp. (Theaceae) as its host in Vietnam.

Distribution. Mainland China (Fujian, Guangdong, Guangxi), Vietnam, Thailand, Cambodia.

Remarks. Specimens from various localities in China show little variation.

XXIV. *Sesquiluna* Forbes, 1955 (FIGURE 45)

Sesquiluna Forbes, 1955, *Tijdschr. Ent.* 98: 121. Type species: *Andraca albilunata* Hampson, 1910, by original designation.

Diagnosis. Characterized by the following features: small to medium sized with ash grey to dark cream-grey ground color; forewings short and broad with festooned outer margin; hindwings without distinct pattern except for two dark spots on inner margin, outer margin broadly rounded or crenulate with distinct tornal emargination; tegumen swollen; uncus short and flattened; gnathos and socii absent; valvae very large and divided on two lobes by a huge emargination; juxta small with caudal emargination; aedeagus long, tubular with a distinct coecum; vesica without cornuti; sternum 8 in males slightly modified, posterior margin with a pair of short, medio-caudal hooks placed close together.

Distribution. Very few specimens are known from NE India, S China, N Thailand, N Vietnam, and Java so far. This here is the first record from China.

Remarks. Zolotuhin & Witt (2009) considered that this genus had been erroneously synonymized with *Theophoba* Fletcher & Nye, 1982 (incorrectly attributed to Mell, 1958; see below) by Kishida (1993). In fact, *Sesquiluna* does not appear to be closely related to *Theophoba* based on the unique characters of the male genitalia that are very quite different from all hitherto known bombycid genera. Nässig & Oberprieler (2008) gave a short discussion on its systematic position, but we temporarily consider that it is a bombycid. However, this taxonomic status should be confirmed by genetic data, although it does form a cluster with *Theophoba* based on COI barcode data (unpublished). At present, three *Sesquiluna* species are known, of which only one is recorded from China (Map 24).

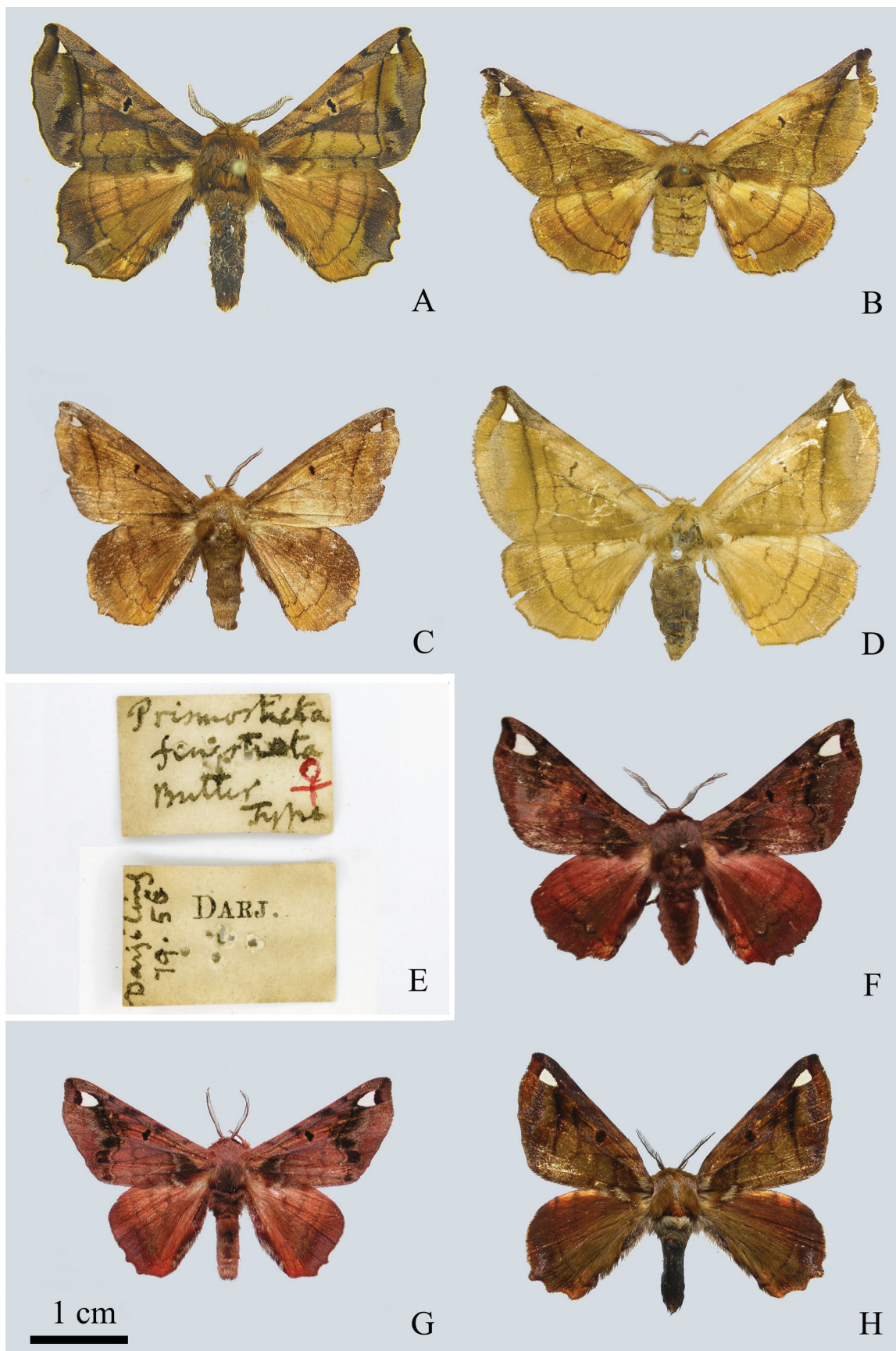


FIGURE 43. Adults of *Prismosticta* spp. A. *P. fenestrata*, male (Taiwan); B. *P. fenestrata*, female (India); C. *P. fenestrata*, male (Guangdong); D–E. *P. fenestrata*, female (India), type; F. *P. regalis*, male (Hunan); G. *P. regalis*, male (Hainan); H. *P. tianpinga*, male (Hunan), holotype.

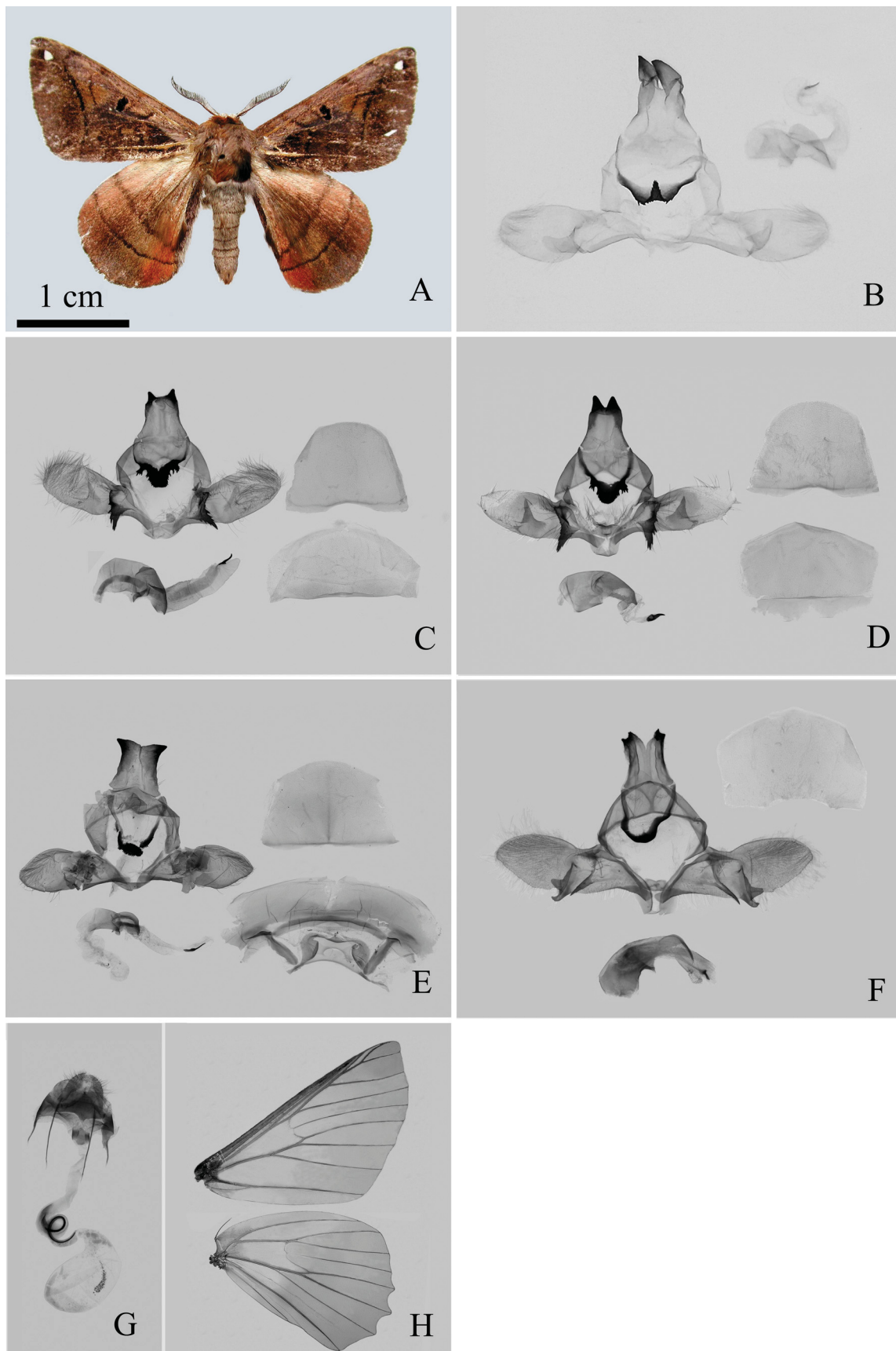
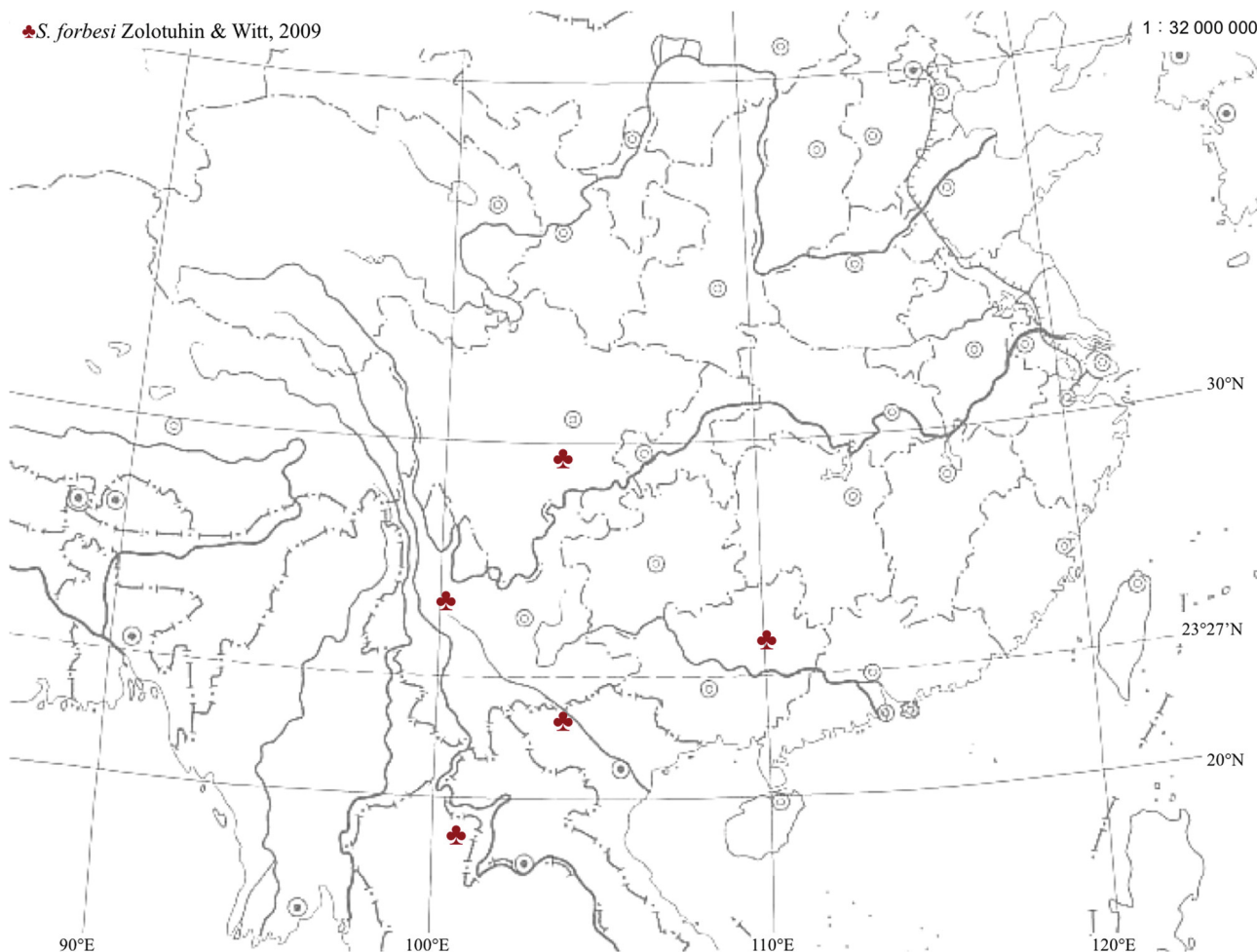


FIGURE 44. Adult, wing venation and genitalia with male abdominal segments of *Prismosticta* spp. A. *P. microprisma*, male (Guangxi); B. *P. fenestrata*, male genitalia (Guangdong); C. *P. regalis*, male genitalia (Hunan); D. *P. regalis*, male genitalia (Hainan); E. *P. tianpinga*, male genitalia (Hunan), holotype; F. *P. microprisma*, male genitalia (Guangxi); G. *P. fenestrata*, female genitalia (Taiwan); H. *P. regalis*, male wing venation (Hunan).



Map 24. Distribution of *Sesquiluna forbesi* Zolotuhin & Witt, 2009 mainly in China.

76. *Sesquiluna forbesi* Zolotuhin & Witt, 2009 (FIGURES 45A–45C) newly recorded from China

Sesquiluna forbesi Zolotuhin & Witt, 2009, *Entomofauna* Suppl. 16: 266. TL: “N. Vietnam, 1600 m, Mt. Fan-si-pan (Nord), Cha-pa, Primärwald”. Holotype: male (MWM) [examined].

Diagnosis. This species is very similar to the type species, *S. albilunata* (Hampson, 1910), but can be distinguished from it by the following characters: saccular lobes of valva smooth and hatchet apically; costa membranous; uncus distinctly bilobed with sickle-shaped lobes; valvae distinctly divided into two zones.

Specimens examined. [GUANGXI] Liuzhou City: 1 male, 11 km southeast of Mengshan, 24°05'N, 110°33'E, 500 m, 12–16.I.2008, V. Siniaev leg. (MWM); [SICHUAN] Leshan City: 1 male, Mt. Emeishan, local collector leg. (MWM); [YUNNAN] Dali City: 1 female, 2000 m, 3–8.VIII.1984, Görgner leg. (SMFL).

Bionomics. The larval host is unknown. Adults appear from late spring to early winter (Plate 11E)

Distribution. Mainland China (Guangxi, Sichuan, Yunnan), Vietnam, Thailand.

Remarks. Here recorded from China for the first time.

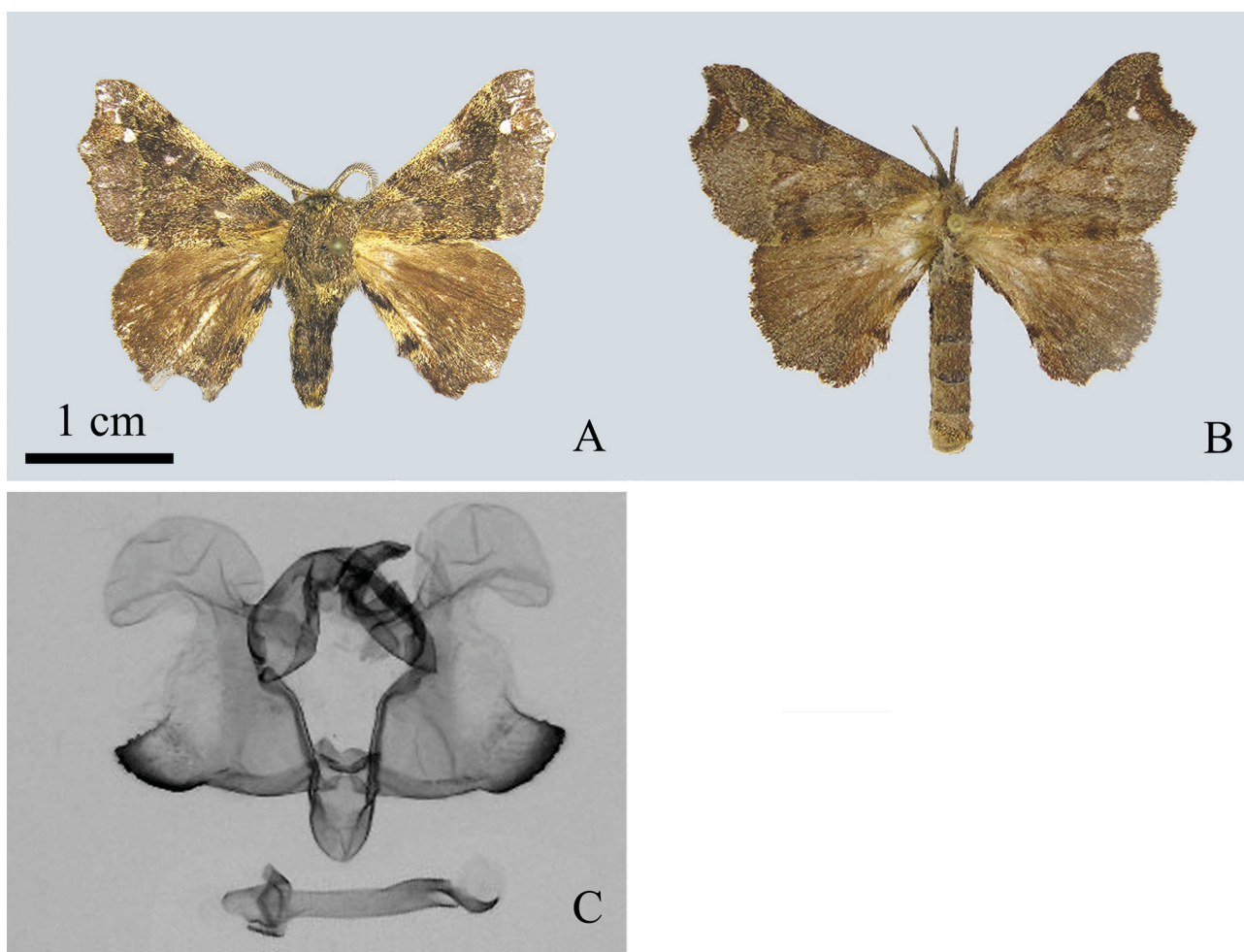


FIGURE 45. Adults and male genitalia of *Sesquiluna forbesi* Zolotuhin & Witt, 2009. A. Male (Vietnam), holotype; B. Female (Yunnan); C. Male genitalia (Sichuan).

XXV. *Theophoba* Fletcher & Nye, 1982 (FIGURE 46)

Theophoba Fletcher & Nye, 1982, *Generic names of Moths of the World* 4: 161 (Type species: *Theophoba pendulans* Mell, 1958, *Dt. ent. Z.* **5**: 207, figs 8, 10; by subsequent designation by Fletcher & Nye, 1982, *Generic names of Moths of the World* 4: 161.

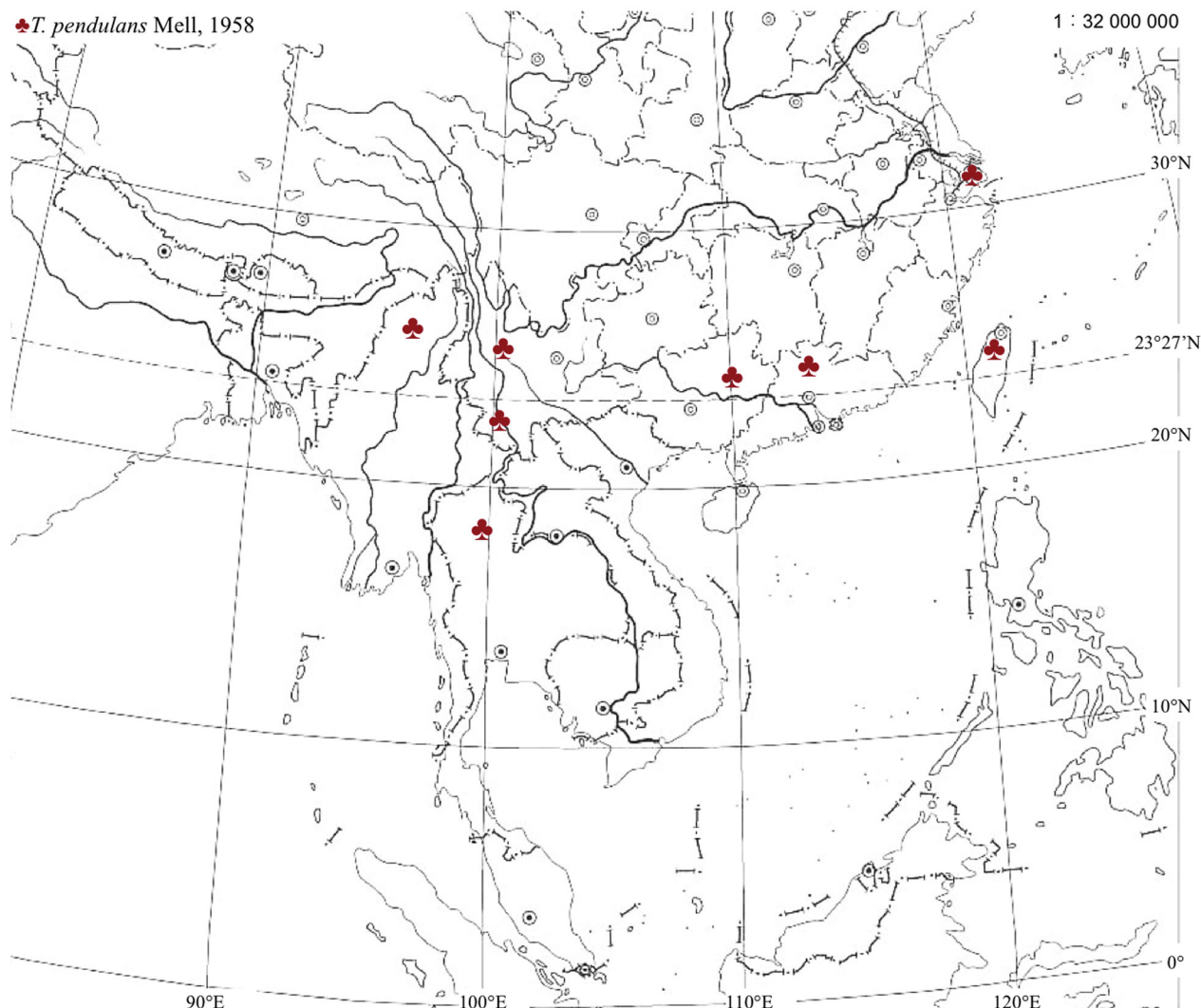
Theophoba Mell, 1958, *Dt. ent. Z. (N.F.)* **5**: 204, 206. (Unavailable; no type species designated)

Diagnosis. Characterized by the following features (from the original description): medium sized with cream-grey to dark brown ground color; forewings elongate, with a slightly falcate apex and a subapical emargination below apex; discal spot large and circular, though faint; postmedial fascia crenulate; hindwings with broadly rounded outer margin and a single rather crenulate transverse (postmedial) fascia; uncus strong and heavy sclerotized; valvae flattened and sclerotized, with a long, curved hook on the costal edge; aedeagus tubular with a short coecum; sternite 8 in males slightly modified, posterior margin with a deep semi-circular emargination, each end produced into a short hook.

Distribution. The range of the genus is incompletely understood because only a very few specimens are known but so far covers S and SE China, Taiwan, Nepal, Myanmar, Thailand, Cambodia, Peninsular Malaysia, Sumatra and Java.

Remarks. Mell (1958) erected *Theophoba* for two included species, *Andraca albilunata* and a new species, *Theophila pendulans*, but failed to designate either as the type species of the genus. Consequently, the name *Theophila* Mell was unavailable under Article 13(b) of the second edition of the Code then in force (ICZN 1964) (Article 13.3 of the current edition, ICZN 1999). This unavailability was subsequently recognized by Koçak (1983), Kishida (1993) and Nässig & Oberprieler (2008). However, Fletcher & Nye (1982) had already

subsequently designated *Theophila pendulans* as type species of *Theophoba*, which was thus made available as Articles 13(a)(ii) and 13(b) of the second edition of the Code then in force (ICZN 1964) (13.1.2 and 13.3 of the current edition, ICZN 1999) were fulfilled. By so doing, Fletcher & Nye (1982) were the first to publish the name *Theophoba* in a way that satisfied the criteria of availability (Articles 10–20 of the current edition of the Code, ICZN, 1999) and so under Article 50.1 (ICZN, 1999) *Theophoba* takes their authorship and date of publication. In this paper, one species is recorded from China (Map 25).



Map 25. Distribution of *Theophoba pendulans* Mell, 1958 in China.

77. *Theophoba pendulans* Mell, 1958 (FIGURES 46A–46E)

Theophoba pendulans Mell, 1958, *Dt. ent. Z.* **5**: 207, figs 8, 10. TL: “Lungtaoshan, Kwangtung” [Guangdong prov.] China.
Holotype: male (ZMHU) [examined].

Diagnosis. Easily distinguished by the following characters: forewing with apex hooked; uncus short, pyramidal, with an apical bifurcation; costal process of valva apically swollen; external margin of valva with protruded ventro-caudal angle; aedeagus apically flattened and broadened, with a ventral rounded plate bearing two large teeth and one or two small marginal thorns.

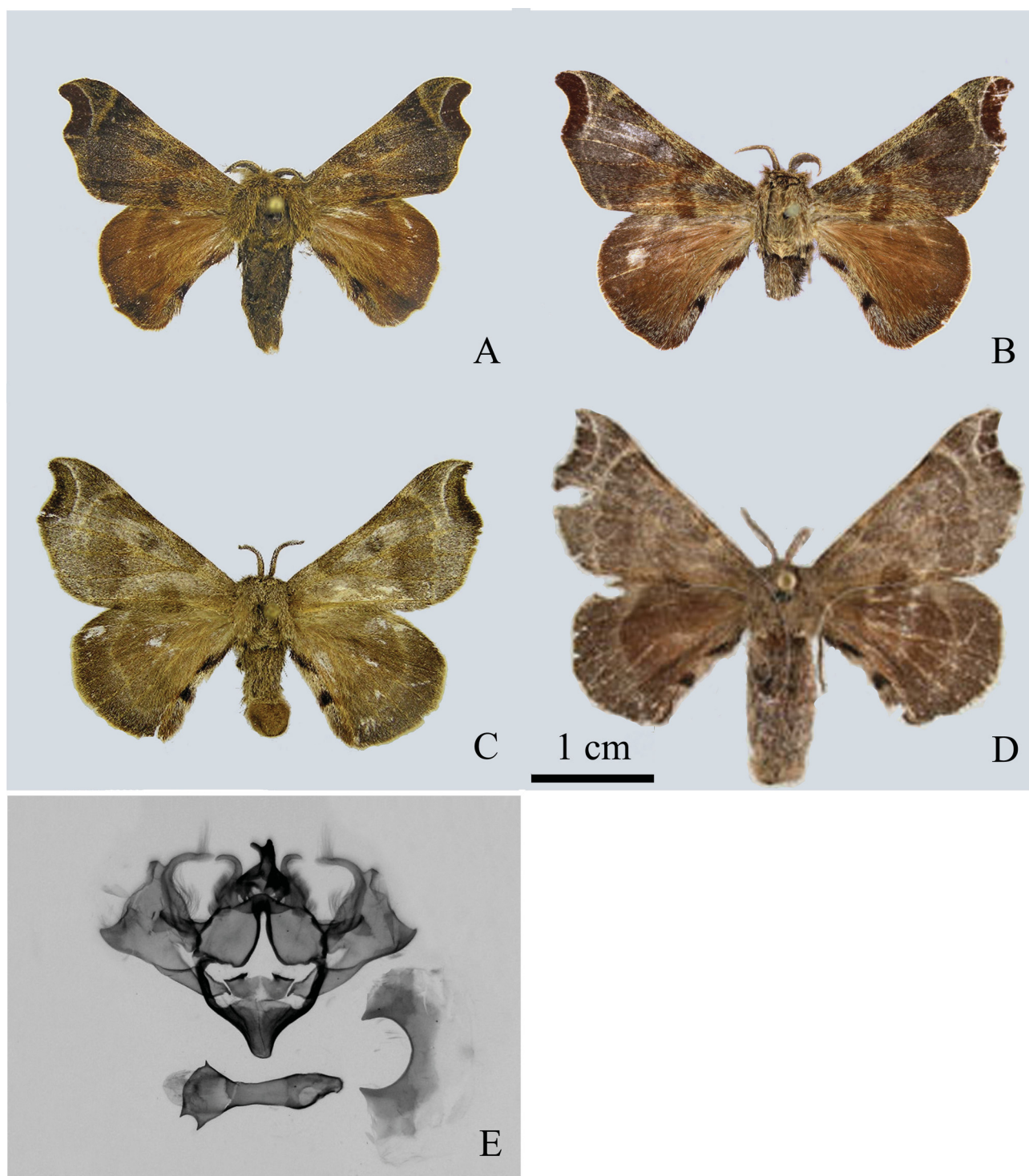


FIGURE 46. Adults and male genitalia of *Theophoba pendulans* Mell, 1958. A. Male (Guangxi); B. Male (Guangdong), holotype; C. Female (Yunnan); D. Male (Taiwan); E. Male genitalia (Guangdong).

Specimens examined. [SHANGHAI] 1 female, Miss.-Mus. Steyl. (ZFMK); [GUANGDONG] Lungtaoshan (Lianping County): 1 male, holotype deposited in ZMHU with the label “[China, Guangdong] Lungtaoshan, ex p. 25.X.19??, leg. R. Mell ”; [GUANGXI] Dayao Shan (Jingxiu County): 1 male, 100 km SE of Liuzhou, 23°45’N, 109°45’E, 1,200 m, April 2005, Sinjaev & his team leg. (MWM); [YUNNAN] Weibaoshan (Weishan County): 1 male, 2,800 m, September 2002, Ying *et al.* leg. (SMFL); Puwen (Xishuangbanna Dai Auton. Pref.): 1 female, 30 km SSW Simao, 900 m, 22°30’N, 100°02’E, 16.III–10.IV.2000, Brechlin’s local collector leg. (MWM).

Bionomics. The larval host and preimaginal stages are unknown, although the holotype was hatched from a cocoon found in the wild. The shape of the cocoon is strongly dissimilar to those of other Bombycidae, resembling rather the saddle-shaped cocoon of *Trabala* (Lasiocampidae), but has a very long thread connecting the cocoon with a substratum (Plate 11F).

Distribution. Mainland China (Shanghai, Guangdong, Guangxi, Yunan) and Taiwan, northern Thailand, northern Myanmar.

Remarks. This is the most widespread species of the genus, being known from southern and southwestern China, northern Thailand and northern Myanmar. The same species is probably also native to Taiwan (1 female, Chunyang, Jenai, Nantou County, Taiwan, C.S. Lin leg. [<http://digimuse.nmns.edu.tw>] and 1 female, Lushan spa, Nantou Hsien, 26.II.1983, H. Yoshimoto leg.) (Kishida, 1984). In Taiwan, we found specimens were almost always incorrectly identified as the endemic Javanese species, *Bombyx horsfieldi* (Moore, 1859).

Checklist of the bombycid species recorded from China

Family Bombycidae Latreille, 1802

Subfamily Bombycinae Latreille, [1802]

Bombyx Linnaeus, 1758

Theophila Moore, 1862

mori (Linnaeus, 1758)

arracanensis Moore & Hutton, 1862

croesi Moore & Hutton, 1862

fortunatus Moore & Hutton, 1862

fuscata Motschulsky, 1866

sinensis Moore & Hutton, 1862

textor Moore & Hutton, 1862

mandarina (Moore, 1872)

mandarina formosana Matsumura, 1927

lemeepauli Lemée, 1950

albicurva Chu & Wang, L.Y., 1993

huttoni Westwood, 1847

affinis Hutton, 1864

bengalensis Moore, 1862

sherwilli Hutton, 1864

Gunda Walker, 1862

Norasuma Moore, 1872

Aristhala Moore, 1878

Clenora Swinhoe, 1899

Hanisa Moore, 1879

javanica (Moore, 1872)

palawana Schultze, 1925

ochracea Walker, 1862

hainana Moore, 1878

sikkima Moore, 1878

variegata Hampson, [1893]

sesostris (Vuillot, 1893), **comb. nov.**

proxima Roepke, 1924, **syn. nov.**

epygrypa West, 1932, **syn. nov.**

ostruma Chu & Wang, 1993, **syn. nov.**

Rotunda Wang, X. & Zolotuhin, gen. nov.
rotundapex (Miyata & Kishida, 1990), comb. nov.
shini Park & Sohn, 2002, syn. nov.

Rondotia Moore, 1885
Ectrocta Hampson, [1893]
menciana Moore, 1885
menciana lurida Grünberg, 1911
diaphana (Hampson, [1893])
lineata Leech, 1898

Triuncina Dierl, 1978
brunnea (Wileman, 1911)
formosana Mell, 1958
xiongi Wang, X. & Zolotuhin, sp. nov.
daii Wang, X. & Zolotuhin, sp. nov.
diaphragma (Mell, 1958)
nitidoidea Chu & Wang, L.Y., 1993
nitida (Chu & Wang, L.Y., 1993), comb. nov.

Valvaribifidum Wang, X., Huang & Wang, M., 2011
huananense Wang, X., Huang & Wang, M., 2011
sinica (Dierl, 1979)

Ocinara Walker, 1856
albicollis (Walker, 1862)

Trilocha Moore, [1860]
Chazena Walker, 1869
Naprepa Walker, 1855
friedeli Dierl, 1978, new record for China
varians (Walker, 1855)
velata Walker, 1869

Penicillifera Dierl, 1978
apicalis (Walker, 1862)
signifera Walker, 1862
lactea (Hutton, 1865)
linafuncta Chu & Wang, L.Y., 1993, syn. nov.
tamsi (Lemée, 1950)
tetrapuncta Chu & Wang, L.Y. 1993

Bivincula Dierl, 1978
diaphana (Moore, 1879)
kalikotei Dierl, 1978, new record for China
watsoni Dierl, 1978

Gnathocinara Dierl, 1978
situla (van Eecke, 1929)
boi Wang, X. & Zolotuhin, sp. nov.

Ernolatia Walker, 1862

moorei (Hutton, 1865)
plana Walker, 1865
bipuncta Chu & Wang, L.Y., 1993

Subfamily **Oberthuerinae** Kuznetsov & Stekolnikov, 1985

Promustilia Zolotuhin, 2007, stat. nov.
andracoides (Zolotuhin, 2007)
yajiangensis Wang, X. & Zolotuhin, sp. nov.

Oberthueria Kirby, 1892
Oberthueria Staudinger, 1892
Euphranor Oberthür, 1880
formosibia Matsumura, 1927
caeca (Oberthür, 1880)
yandu Zolotuhin & Wang, X., 2013
jiatongae Zolotuhin & Wang, X., 2013
lunwan Zolotuhin & Wang, X., 2013

Andraca Walker, 1865
Pseudoeupterote Shiraki, 1911
bipunctata Walker, 1865
theae (Matsumura, 1909)
apodecta Swinhoe, 1907
olivacea Matsumura, 1927
hedra Chu & Wang, L.Y., 1993
ravida Yang, 1995
gongshanensis Wang, X., Zeng & Wang, M., 2011
melli Zolotuhin & Witt, 2009
nobilorum Zolotuhin, 2012
nobilorum houtuae Wang, X. & Zolotuhin, 2012
trilochoides Moore, 1865
roepkei Bryk, 1944
henosa Chu & Wang, L.Y., 1993

Pseudandraca Miyata, 1970
flavamaculata (Yang, 1995)
nabesan Kishida & Owada, 2002

Mustilizans Yang, 1995
drepaniformis Yang, 1995
hepatica (Moore, 1879)
dierli (Holloway, 1987)
baishanzua Yang, 1995, syn. nov.
eitschbergeri Zolotuhin, 2007
shennongi Yang & Mao, 1995
lepusa Zolotuhin, 2007, new record for China
sinjaevi Zolotuhin, 2007
capella Zolotuhin, 2007

Comparmustilia Wang, X. & Zolotuhin, gen. nov.
sphingiformis (Moore, 1879), comb. nov.

terminata Yang, 1995, **syn. nov.**
semiravida (Yang, 1995), **comb. nov.**
orthocosta Yang, 1995, **syn. nov.**
gerontica (West, 1932), **comb. nov.**

Smerkata Zolotuhin, 2007, **stat. nov.**
fusca (Kishida, 1993), **comb. nov.**
craptalis (Zolotuhin, 2007)
brechlini (Zolotuhin, 2007), **new record for China**
ulliae (Zolotuhin, 2007)
zolotuhini Saldaitis, Ivinskis & Rimsaite, 2015

Dalailama Staudinger, 1896
bifurca Staudinger, 1896
vadim Witt, 2006

Mustilia Walker, 1865
falcipennis Walker, 1865
glabrata Yang, 1995
lobata Zolotuhin, 2007, **syn. nov.**
castanea Moore, 1879, **new record for China**
undulosa Yang & Mao, 1995
sabriliformis Zolotuhin, 2007, **syn. nov.**
attacina Zolotuhin, 2007
pai Zolotuhin, 2007

Subfamily **Prismostictinae** Forbes, 1955

Prismostictoides Zolotuhin & Tran, 2011
unihyala (Chu & Wang, L.Y., 1993)

Prismosticta Butler, 1880
fenestrata Butler, 1880
sinica Yang, 1995
regalis Zolotuhin & Witt, 2009
tianpinga Wang, X., Huang & Wang, M., 2011
microprisma Zolotuhin & Witt, 2009

Sesquiluna Forbes, 1955, **new record for China**
forbesi Zolotuhin & Witt, 2009, **new record for China**

Theophoba Fletcher & Nye, 1982
pendulans Mell, 1958

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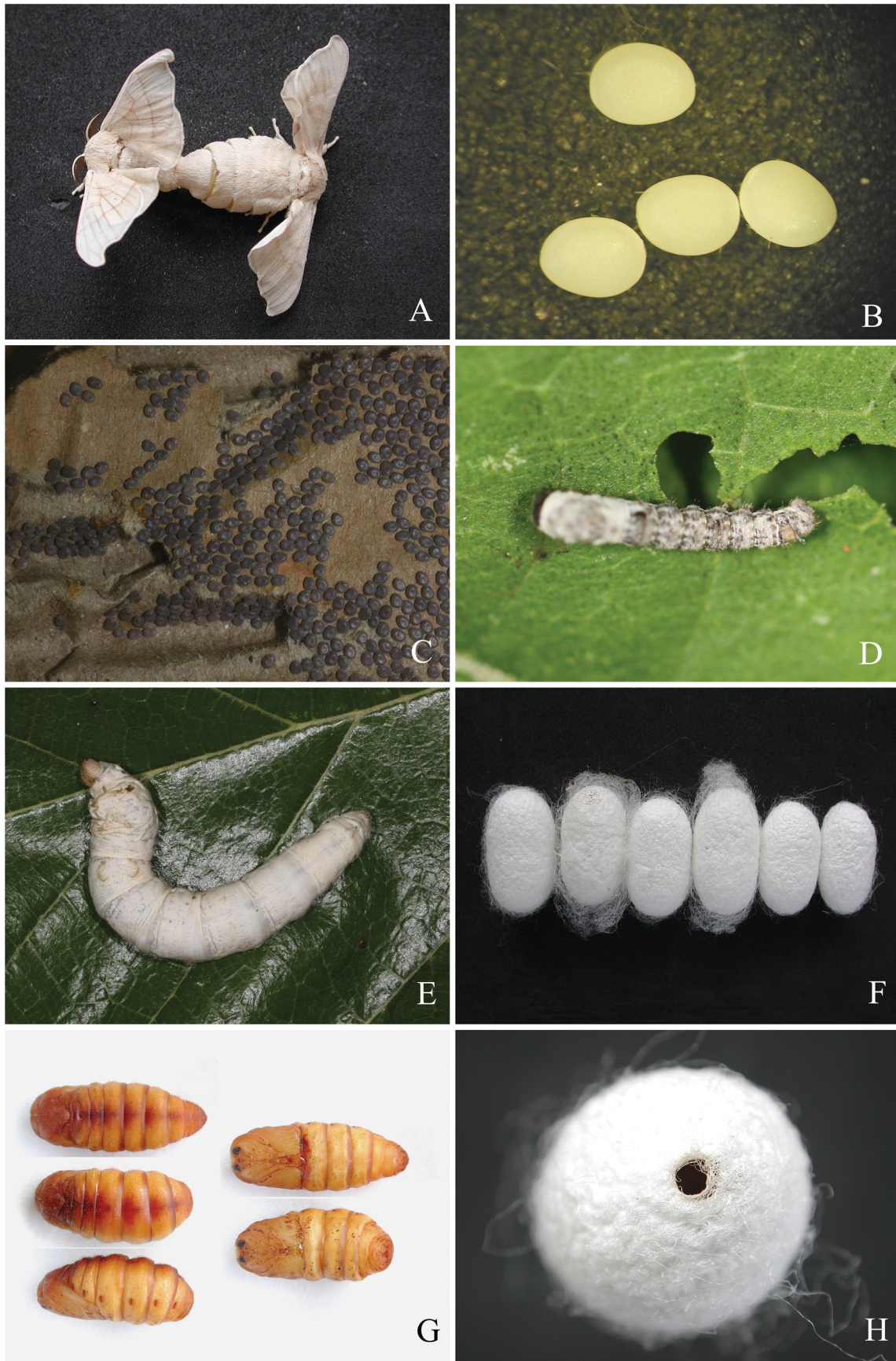


Plate 1. Habitus and immature stages (I). A–H. *Bombyx mori*: A–B. adults and eggs (stock from Guangzhou City, Guangdong; A. mating adults photographed by Guo-Hua Huang, B. eggs photographed by Wei Li); C. eggs (Changsha City, Hunan, photographed by Xing Wang); D–H. immature stages (Changsha City, Hunan, photographed by Jie Zhu; D. immature larva, E. mature larva, F. cocoons, G. pupae, H. cocoon with emergence hole).

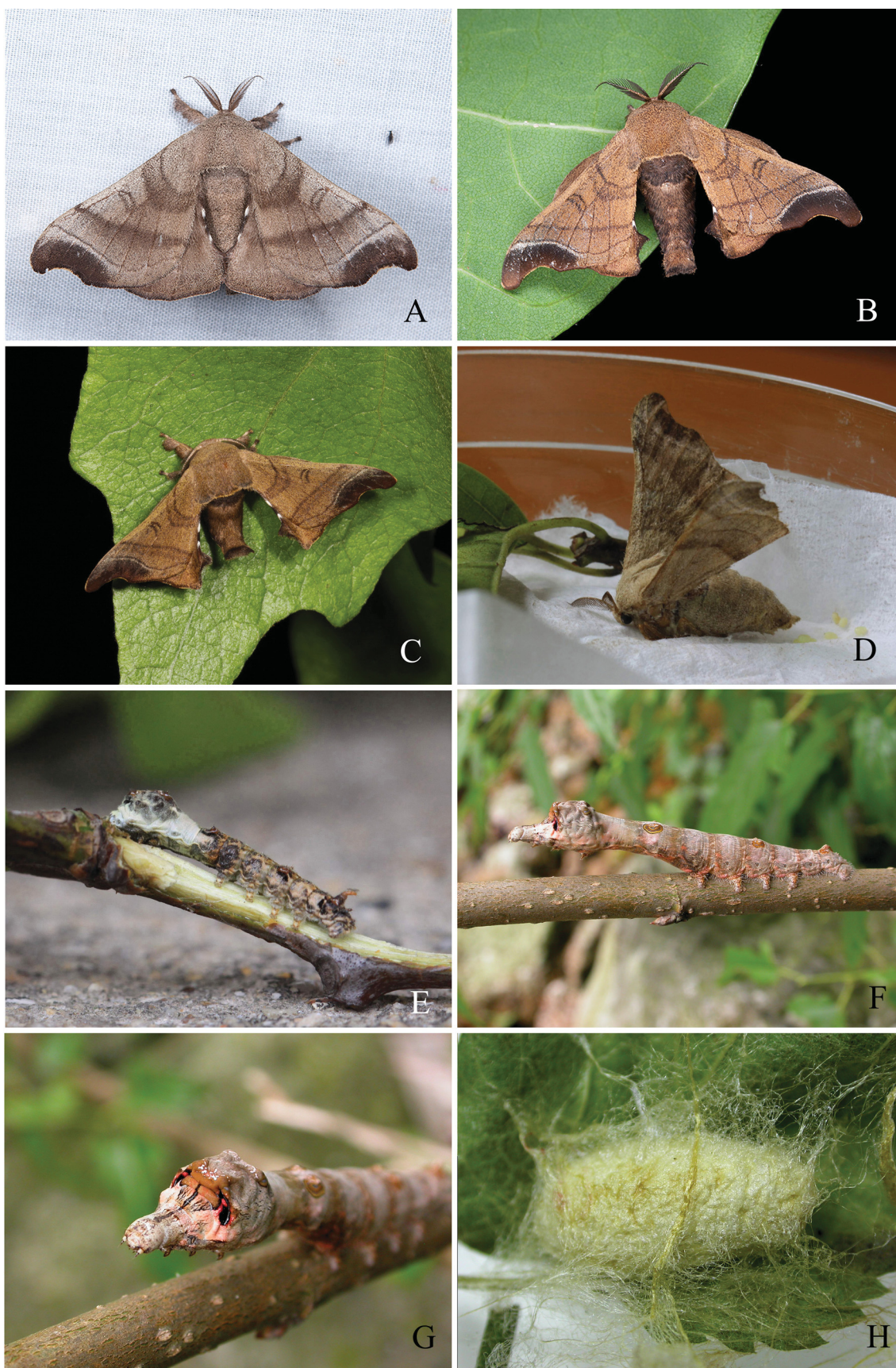


Plate 2. Habitus and immature stages (II). A–H. *Bombyx mandarina*: A–B. adults (Taiwan, photographed by Shipher Wu; A. female, Hualien County, B. male, Chiayi County); C–E. adults and immature stages (Chuzhou City, Anhui, photographed by Guo-Hua Huang; C. male, D. female laying eggs, E. immature larva); F–H. larva and cocoon (Mt. Shunhuangshan, Hunan, photographed by Liu-Sheng Chen; F–G. mature larva, H. cocoon).

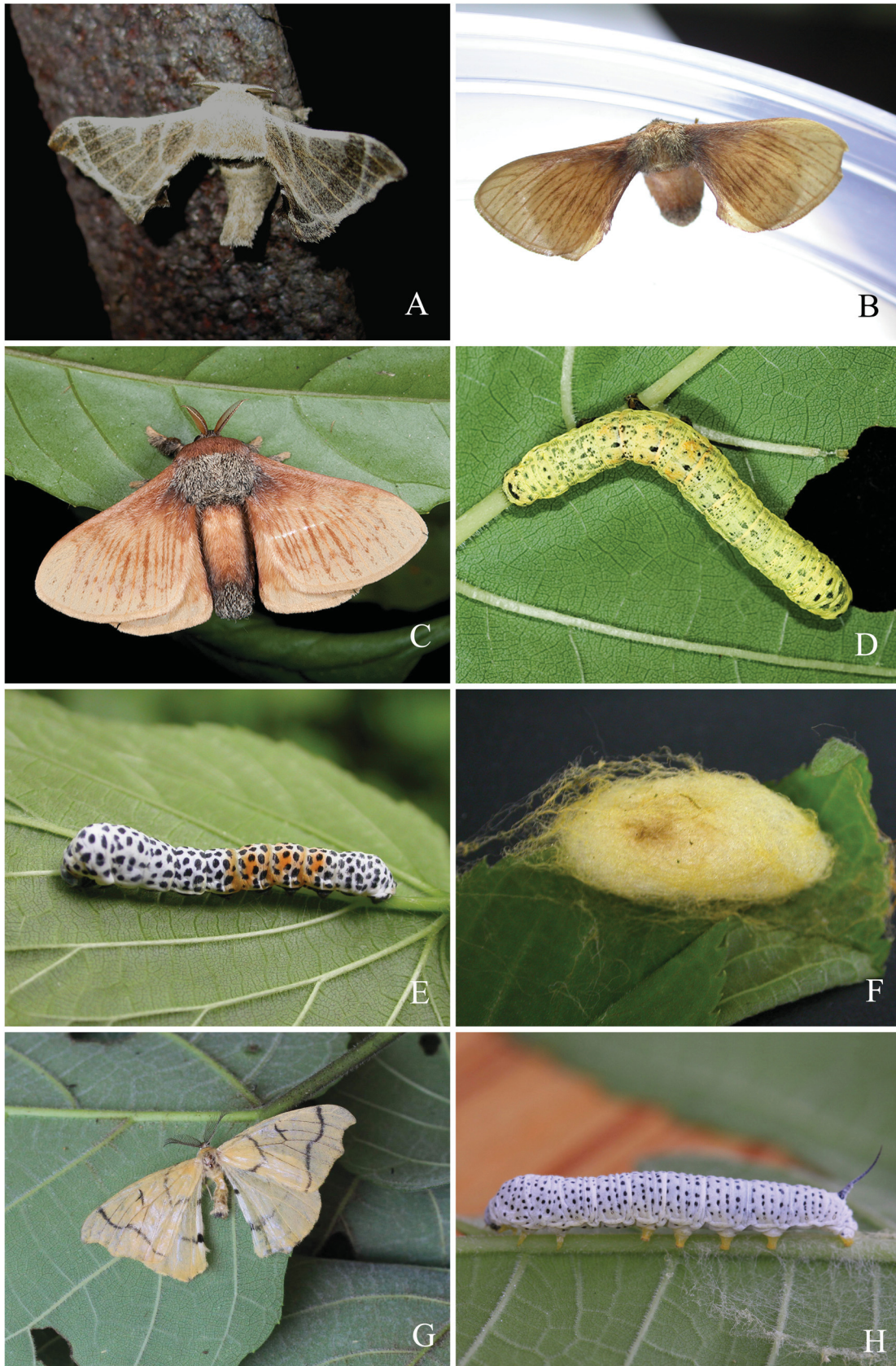


Plate 3. Habitus and immature stages (III). A. *Bombyx lemeepauli*, male (Guangxi, photographed by Min Wang); B–F. *Rotunda rotundapex* B. female (Mt. Tianpingshan, Hunan, photographed by Liu-Sheng Cheng); C. male (Yilan County, Taiwan, photographed by Shipher Wu); D. mature larva (Taiwan, photographed by Li-Chen Shih); E–F. larva and cocoon (Mt. Tianpingshan, Hunan, photographed by Liu-Sheng Chen; E. mature larva, F. cocoon); G–H. *Rondotia menciana* (Huangshan City, Anhui, photographed by Guo-Hua Huang; G. male, H. mature larva).



Plate 4. Habitus and immature stages (IV). A–B. *Rondotia menciaana* (Huangshan City, Anhui, photographed by Guo-Hua Huang; A. cocoon, B. pupa); C–D. *Triuncina brunnea*, adults (Taiwan; C. male, Foshan Plant Garden photographed by Guo-Hua Huang, D. male, Yilan County photographed by Shipher Wu); E–H. *Valvaribifidum huananense* (Nanling National NR, Guangdong, photographed by Liu-Sheng Chen; E. female adult, F. mature larva, G. head of mature larva, H. cocoon).

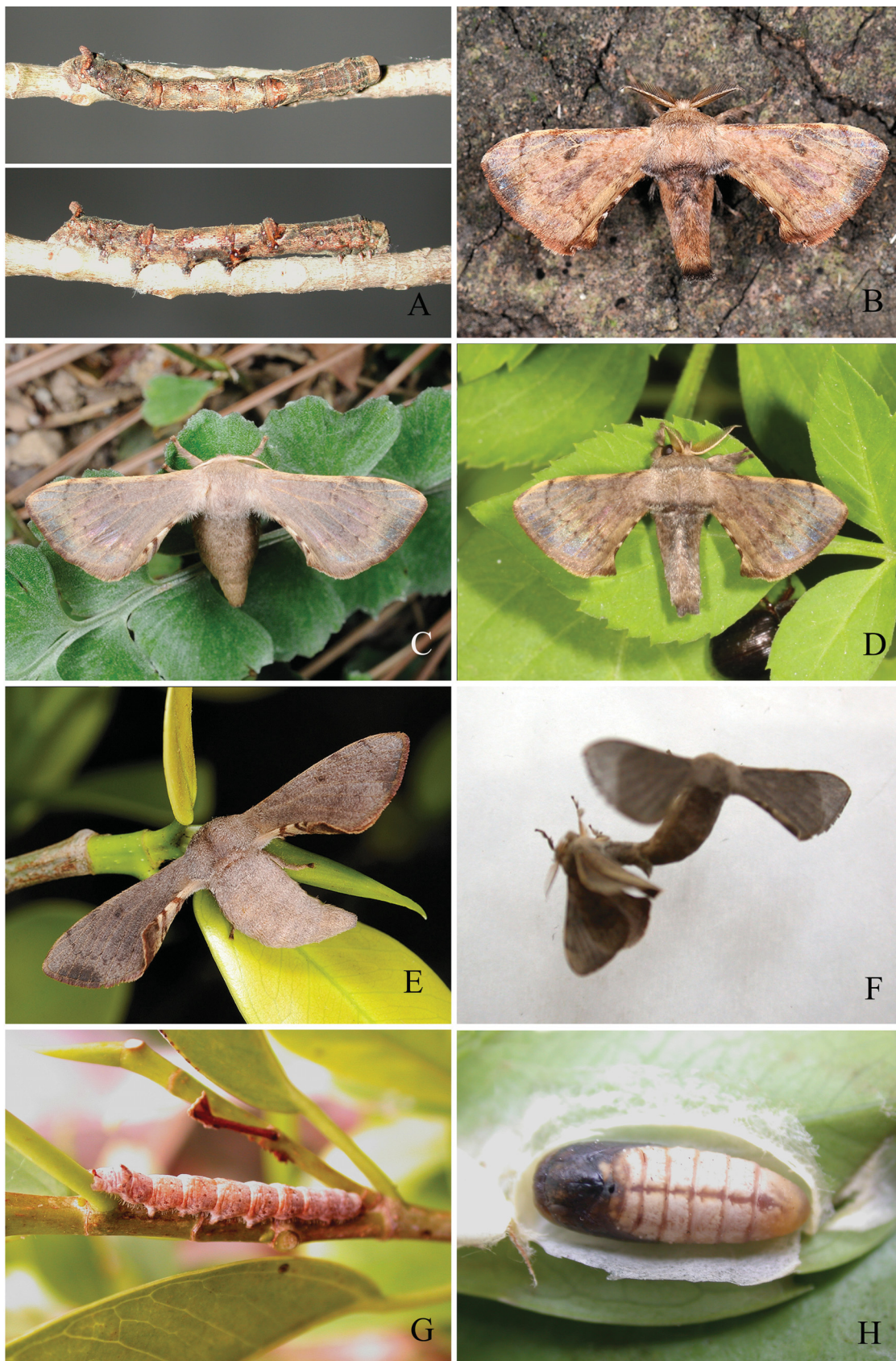


Plate 5. Habitus and immature stages (V). A. *Ocinara albicollis*, mature larva (Guangzhou City, Guangdong, photographed by Liu-Sheng Chen); B–D. *Trilocha varians*, adults (Taipei City, Taiwan; B. male photographed by Shipher Wu, C. female photographed by Shipher Wu, D. male photographed by Guo-Hua Huang); E–H. *Trilocha varians* (E. female adult (Taipei City, Taiwan photographed by Shipher Wu); F–H. adults and immature stages (Guangzhou City, Guangdong, photographed by Guo-Hua Huang; F. mating; G. larva; H. pupa).

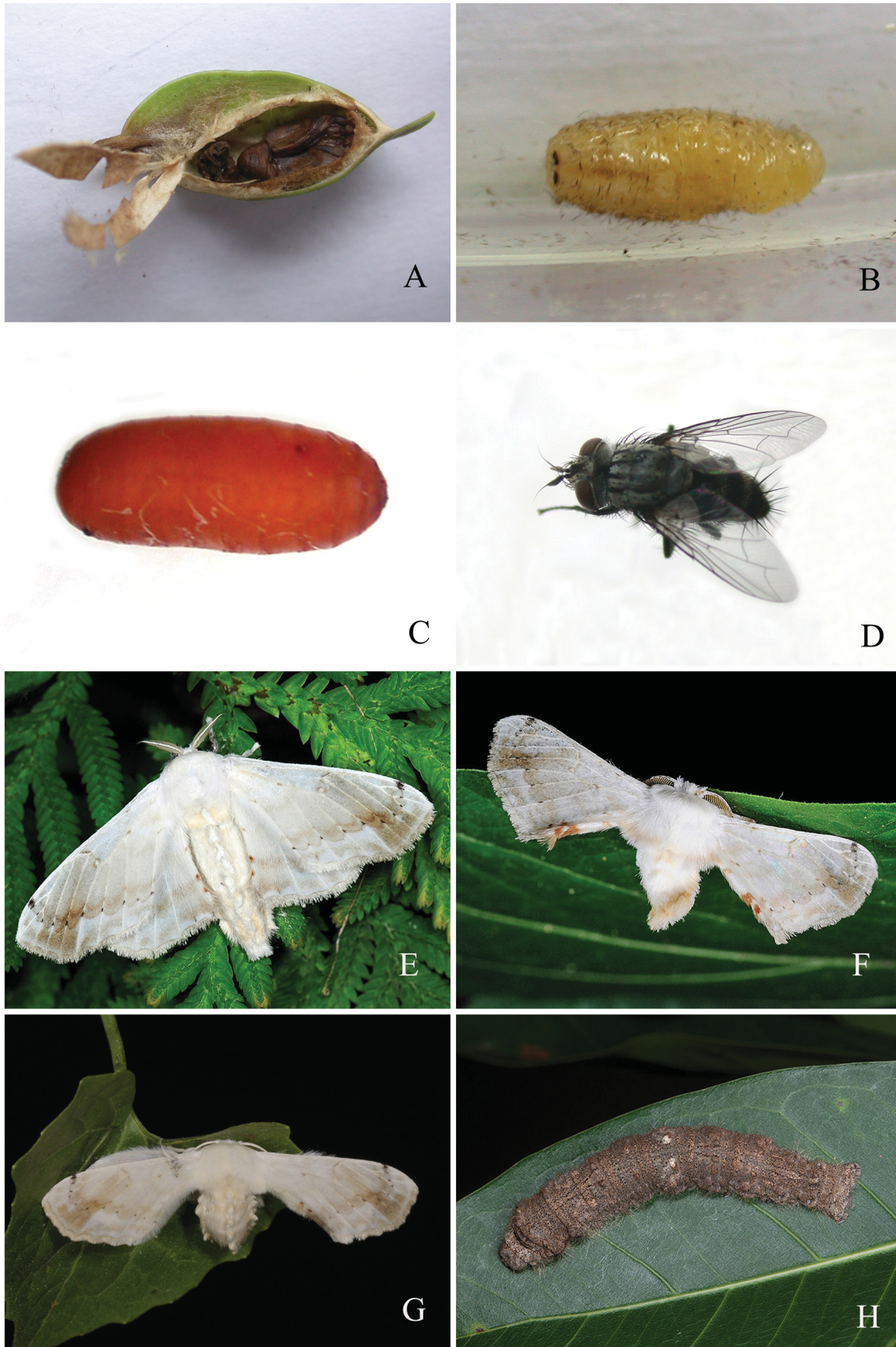


Plate 6. Habitus and immature stages (VI). A. pupa of *Trilocha varians* parasitized by an unidentified tachinid fly (Guangzhou City, Guangdong, photographed by Guo-Hua Huang); B–D. tachinid parasitic fly of *T. varians* (Guangzhou City, Guangdong, photographed by Guo-Hua Huang; B. larva; C. pupa; D. adult); E–H. *Ernolatia moorei*, adult and larva E–F. adults (Taipei City, Taiwan, photographed by Shipher Wu; E. male; F. female); G. female (Taipei City, Taiwan, photographed by Guo-Hua Huang); H. mature larva (Nantou County, Taiwan, photographed by Shipher Wu).

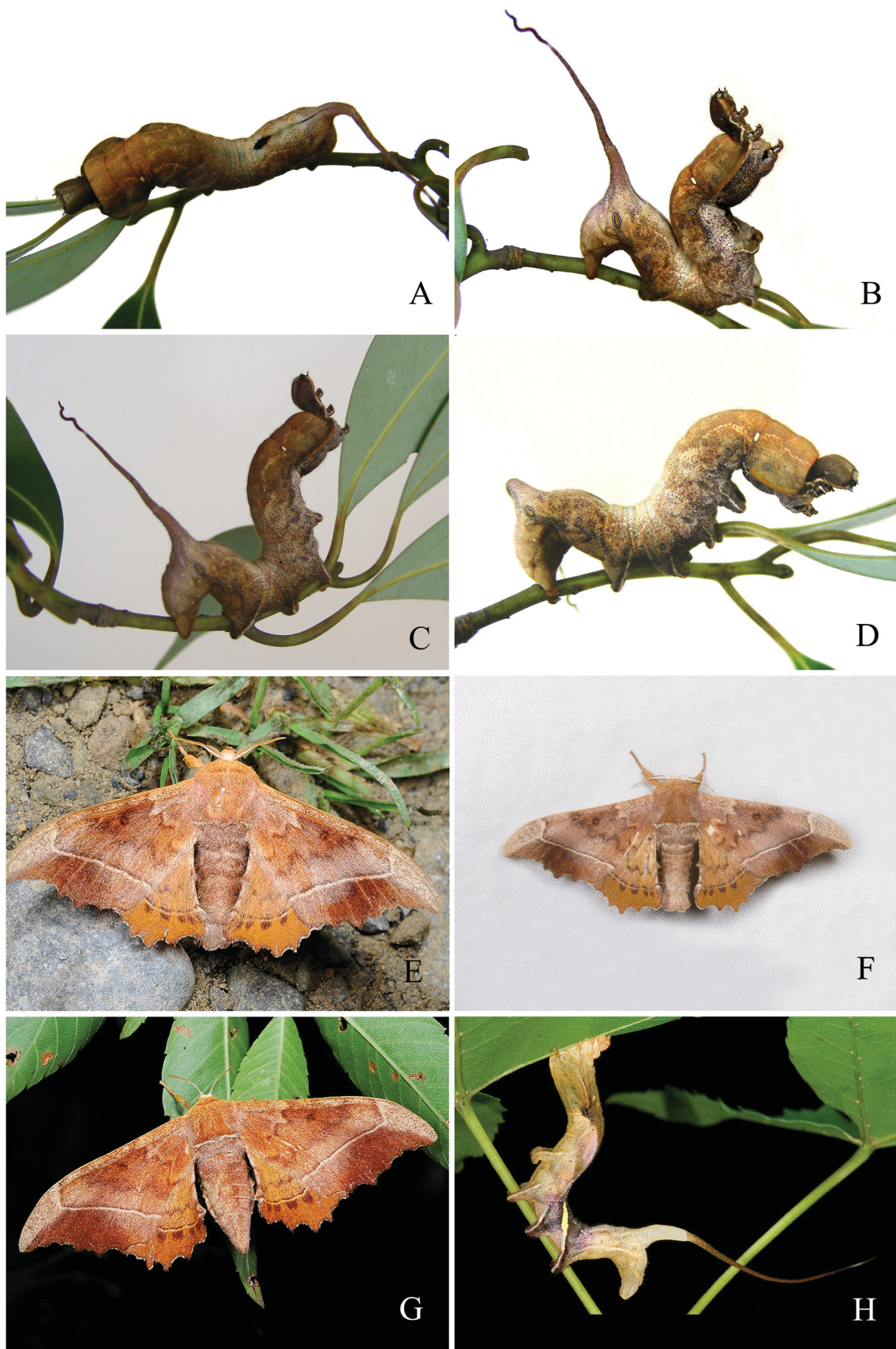


Plate 7. Habitus and immature stages (VII). A–D. *Oberthueria* sp., mature larva (Nanling National NR, Guangdong, photographed by Min Wang); E–H. *Oberthueria formosibia* (E. male (Nantou County, Taiwan, photographed by Shipher Wu); F. male (Taoyuan County, Taiwan, photographed by Guo-Hua Huang); G. female (Nantou County, Taiwan, photographed by Shipher Wu); H. mature larvae (Taiwan, photographed by Li-Chen Shih).

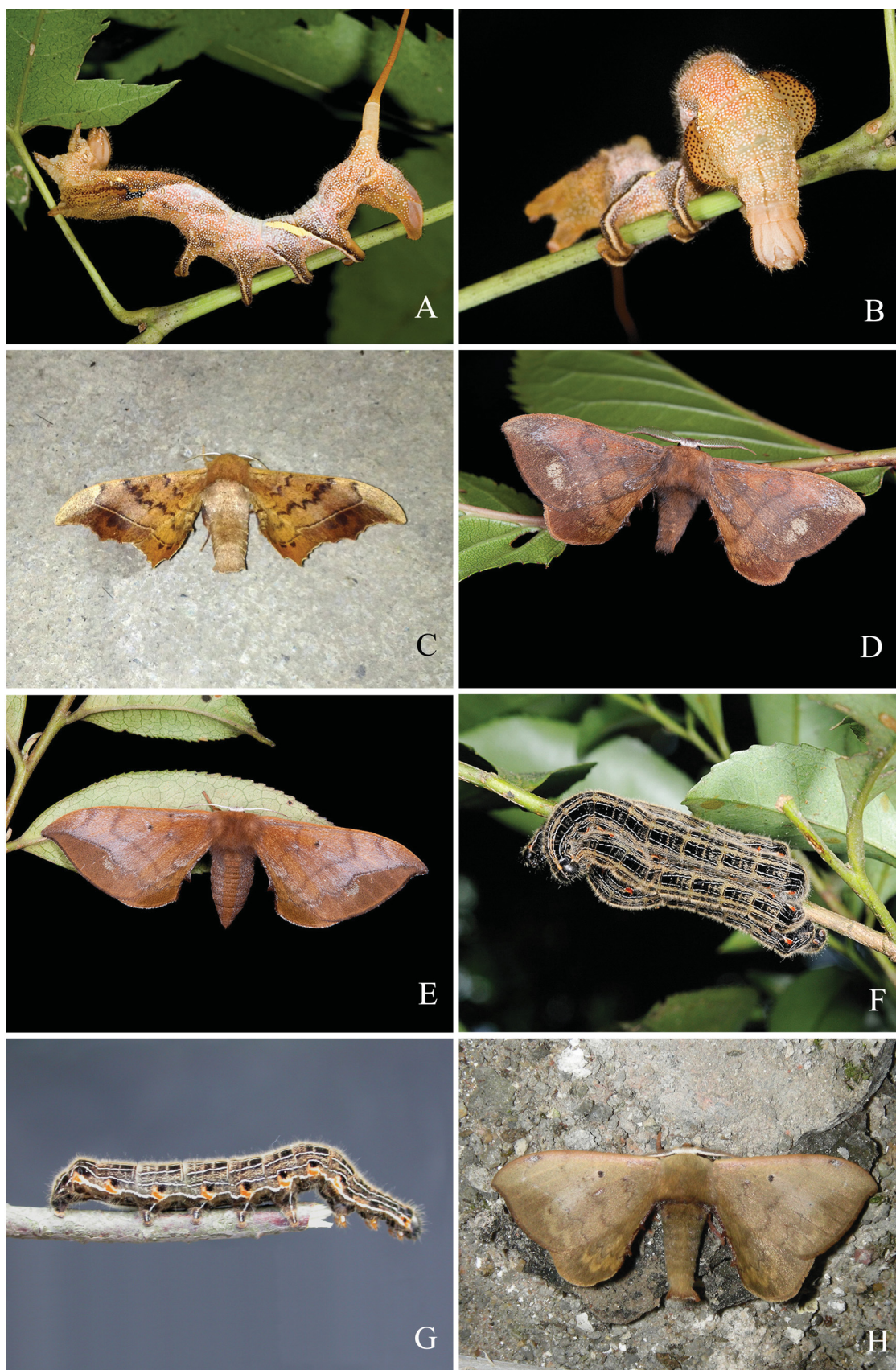


Plate 8. Habitus and immature stages (VIII). A–B. *Oberthueria formosibia*, mature larvae (Taiwan, photographed by Li-Chen Shih); C. *O. jiatongae*, male (Mt. Tianpingshan, Hunan, photographed by Guo-Hua Huang); D–G. *Andraca theae* D–F. adults and larva (Taiwan, photographed by Shipher Wu; D. male, Miaoli County, E. female, Nantou County, F. mature larvae); G. mature larva (Nanling National NR, Guangdong, photographed by Min Wang); H. *A. olivacea*, male (Yilan County, Taiwan, photographed by Guo-Hua Huang).

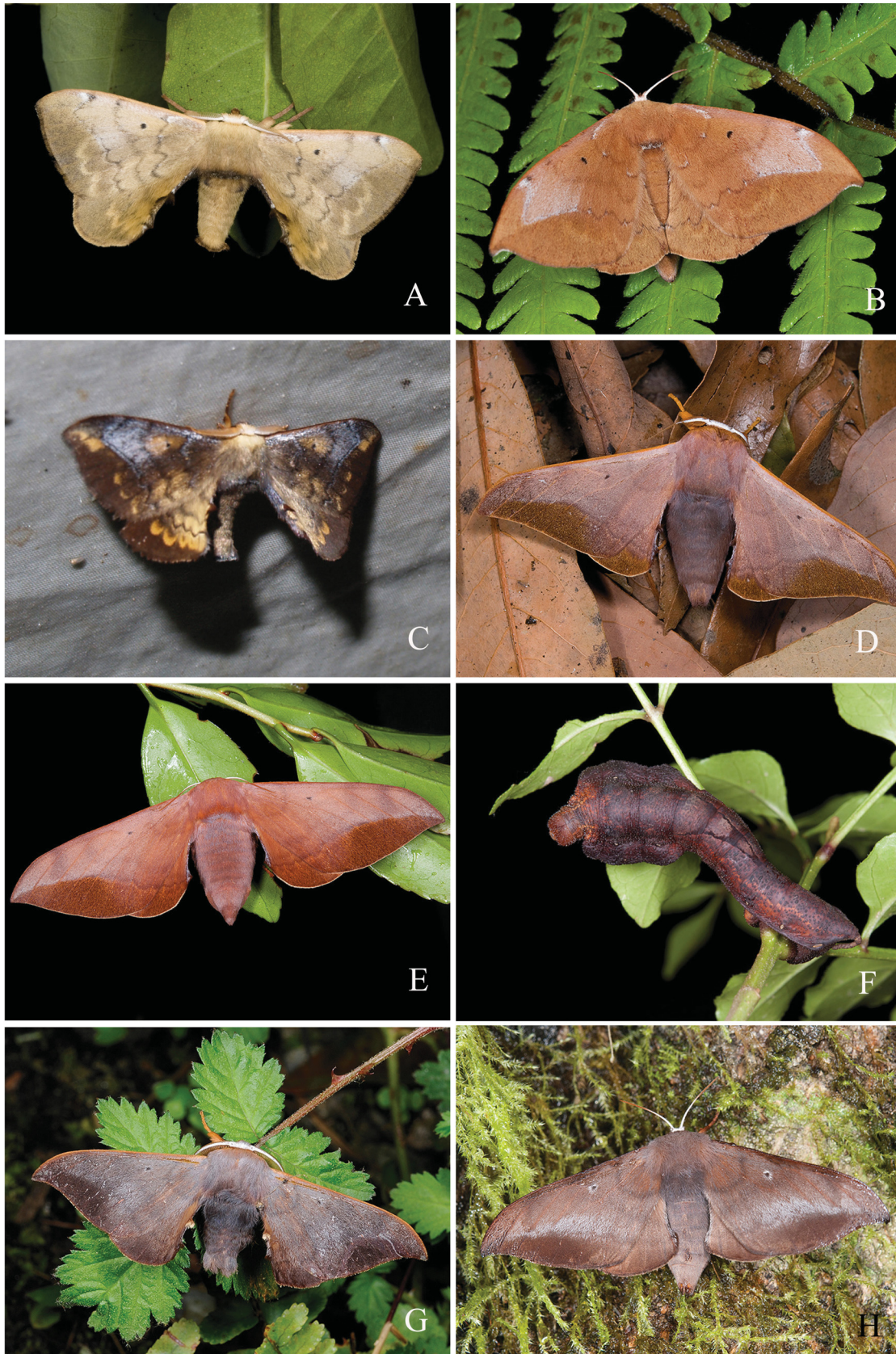


Plate 9. Habitus and immature stages (IX). A–B. *Andraca olivacea*, adults A. male (Nanling National NR, Guangdong, photographed by Guo-Hua Huang); B. female (Yilan County, Taiwan, photographed by Shipher Wu); C. *Pseudandracca flavamaculata*, male (Nanling National NR, Guangdong, photographed by Guo-Hua Huang); D–F. *Comparmustilia gerontica* (Taiwan, photographed by Shipher Wu; D. male, Nantou County, E. female, Nantou County, F. mature larva, Taichung County); G–H. *Smerkata fusca*, adults (Taiwan, photographed by Shipher Wu; G. male, Yilan County, H. female, Taoyuan County).

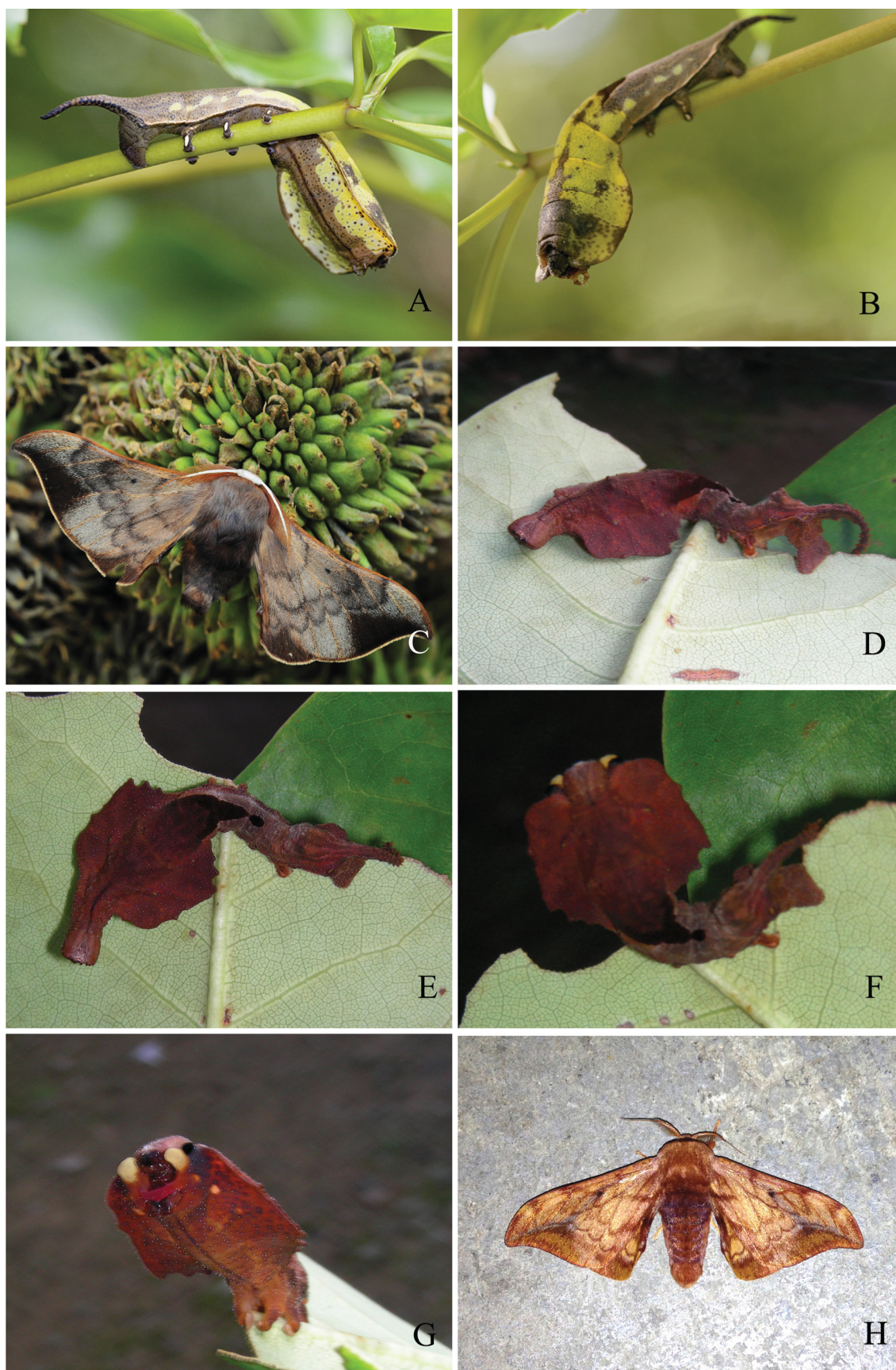


Plate 10. Habitus and immature stages (X). A–B. *Smerkata fusca*, mature larva (Taiwan, photographed by Jun-You Liu); C. *S. brechlini*, male (Mt. Ailaoshan, Yunnan, photographed by Jin Chen); D–G. *Mustilia* sp., mature larvae (Mt. Wuyishan, Jiangxi, photographed by Min Wang); H. *M. undulosa*, male (Mt. Tianpingshan, Hunan, photographed by Guo-Hua Huang).

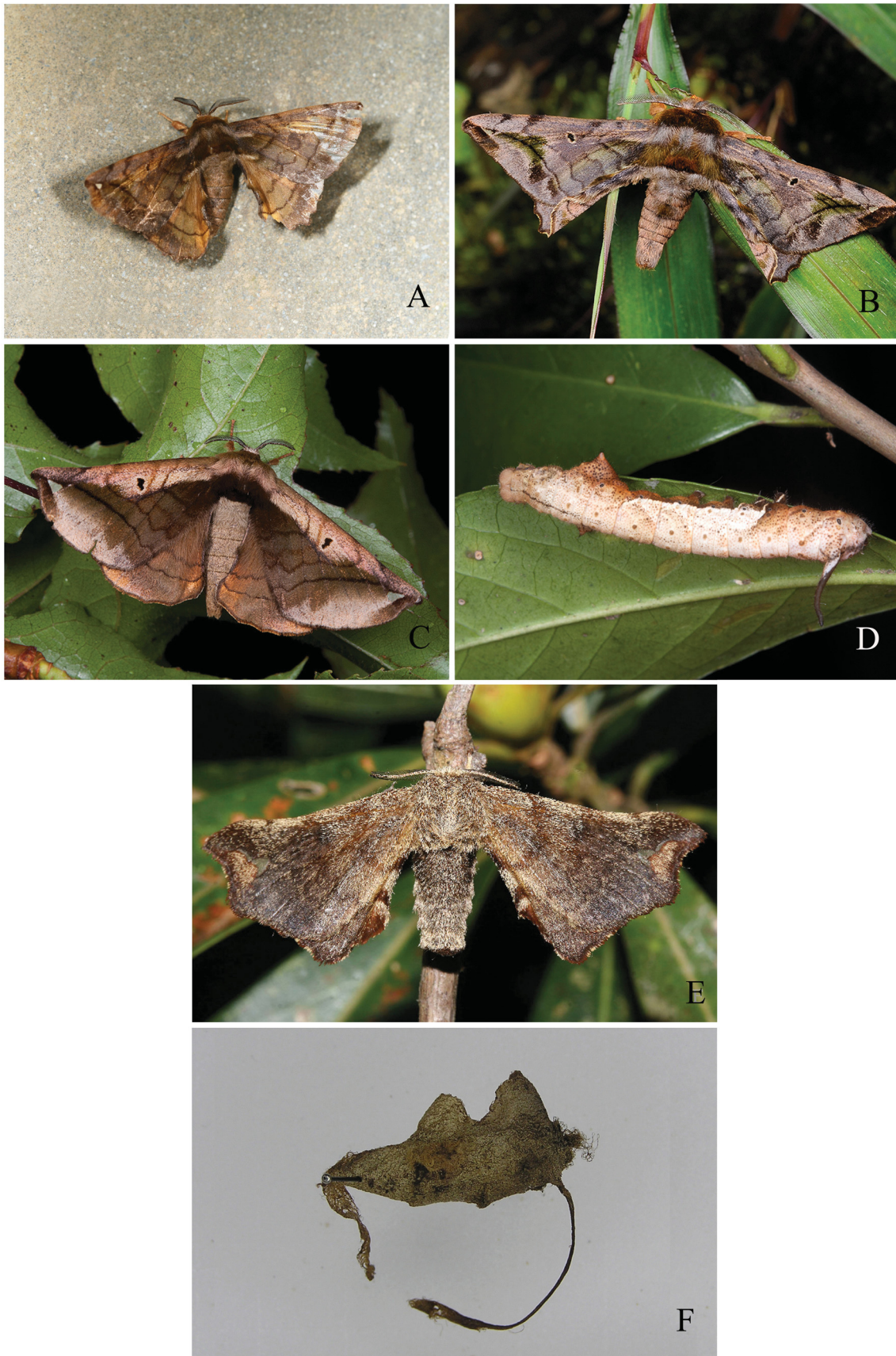


Plate 11. Habitus and immature stages (XI). A–D. *Prismosticta fenestrata* A. male adult (Hualien County, Taiwan, photographed by Guo-Hua Huang); B–D. moth and larva (Yilan County, Taiwan, photographed by Shipher Wu; B–C. male adult, D. mature larva); E. *Sesquiluna forbesi*, male resting (Mt. Emeishan, Sichuan, photographed by Viktor Sinyaev); F. *Theophoba pendulans*, cocoon of holotype (Guangdong, provided by Vadim V. Zolotuhin).